

REGULATIONS FOR REGISTRATION,
INSTALLATION, OPERATION AND
CLOSURE OF UNDERGROUND OIL
STORAGE FACILITIES

Chapter 691

Department of Environmental Protection



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**Chapter 691: REGULATIONS FOR REGISTRATION, INSTALLATION, OPERATION
AND CLOSURE OF UNDERGROUND OIL STORAGE FACILITIES**

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Chapter 691**REGULATIONS FOR REGISTRATION, INSTALLATION, OPERATION AND CLOSURE OF UNDERGROUND OIL STORAGE FACILITIES**

SUMMARY: The regulations replace previous regulations governing underground petroleum storage tanks and facilities. The regulations require the registration with the Commissioner of all new and existing underground petroleum tanks. They establish standards for the installation, operation and proper closure of all types of underground petroleum storage facilities. The regulations also outline requirements for the reporting and cleanup of leaks or other oil pollution at underground storage facilities.

- 1. Legal Authority.** This rule is authorized by 38 M.R.S.A. Section 561, et seq., as enacted by P.L. 1985, Chapter 496 and as amended by P.L. 1987, Chapter 491 and P.L. 1990, Chapter 865. The statute requires the registration of all existing, new, and replacement underground oil storage facilities with the Department of Environmental Protection and authorizes and provides direction for the Board of Environmental Protection to develop rules for the design, installation, replacement, operation, and closure of underground oil storage facilities and tanks except for tanks used for the storage of propane.
- 2. Preamble.** It is the purpose of these rules consistent with legislative policy, to provide necessary controls over underground oil storage facilities so as to ensure the protection of Maine's ground water resources and of public health, safety, welfare and the overall environment.
- 3. Definitions.** The following terms as used in this rule shall have the following meaning:
 - A. Ancillary equipment.** "Ancillary equipment" means devices including but not limited to, piping fittings, flanges, valves and pumps used to distribute, meter or control the flow of oil to or from an underground oil storage tank.
 - B. Board.** "Board" means the Maine Board of Environmental Protection.
 - C. Cathode.** "Cathode" means the electrode of an electrochemical cell at which reduction occurs.
 - D. Cathodic protection tester.** "Cathodic protection tester" means an underground storage tank installer certified by the Maine Board of Underground Storage Tank Installers or a person certified by the Commissioner pursuant to 38 M.R.S.A. Section 567-A and Appendix M of this rule.
 - E. Cathodically protected.** "Cathodically protected" means the use of a technique, consistent with the National Association of Corrosion Engineers publication, "Recommended Practice for Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems", RP-02-85, (April 1985) as amended, to prevent the corrosion of a metal surface by making that surface the cathode of an electrochemical cell.
 - F. Cathodic protection monitoring.** "Cathodic protection monitoring" means a process of measuring the structure to electrolyte potential to determine whether a cathodically protected structure is being adequately protected against corrosion. Cathodic protection monitoring shall be performed according to the requirements of Appendix A.

- G. Contamination.** "Contamination" for the purposes of this rule only and as applied to ground water, surface water, and soils; means oil pollution attributable to an underground oil storage facility exceeding any one of the following standards:
- (1) The presence of free product or an oil sheen;
 - (2) Primary drinking water standards adopted by the Maine Department of Human Service's Bureau of Health under Title 22 MRSA, Section 2611;
 - (3) Maximum exposure guidelines developed and recommended by the Maine Department of Human Service's Bureau of Health;
 - (4) A statistically significant increase in the concentration of measured parameters at on-site or down-gradient locations by comparison with representative background values, as demonstrated by statistical methods and procedures using a 95% level of confidence, approved by the Commissioner and consistent with the provisions of 40 CFR Subsection 264.97 (with the exception that where the "Regional Administrator" is referred to, the "Commissioner" is meant).
 - (5) Total gasoline or total heating oil hydrocarbon concentrations in soil exceeding five (5) and 10 parts per million, respectively; or
 - (6) Soils visibly stained or discolored by a heavy oil.
- H. Corrosion expert.** "Corrosion expert" means a person who is certified by the Commissioner pursuant to 38 M.R.S.A. Section 567-A and Appendix N of this rule, as qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks.
- I. Class I liquids.** "Class I liquids" means liquids having a flash point below 100 degrees F.
- J. Commissioner.** "Commissioner" means the Commissioner of the Maine Department of Environmental Protection.
- K. Continuous monitoring.** "Continuous monitoring" means the use of a monitoring device capable of automatic, continuous unattended operation, which will provide a clear, audible or visual indication of the presence of liquid hydrocarbons or hydrocarbon vapors outside of a primary hydrocarbon container or the loss of the primary containment structure's integrity.
- L. Corrosion-induced leak.** "Corrosion-induced leak" means any discharge of oil from an underground oil storage facility or tank caused by the deterioration of materials which comprise the facility or tank, because of a reaction with the internal or external environment of the facility or tank.
- M. Daily inventory and reconciliation.** "Daily inventory and reconciliation" means accounting practices for oil stock control, which include at a minimum: (1) a record of all bulk liquid receipts; (2) a record of all liquid dispersed from the facility; (3) a daily reconciliation between sales, use, receipts, and inventory-on-hand; and (4) a monthly summary of inventory results maintained in accordance with the requirements of Section 5(D)(1) of this Rule.

- N. Department.** "Department" means the Maine Department of Environmental Protection composed of the Board and the Commissioner.
- O. Discharge.** "Discharge" means any spilling, leaking, pumping, pouring, emitting, escaping, emptying, or dumping.
- P. Double-walled tank.** "Double-walled tank" means an underground oil storage tank providing no less than 300 degree secondary containment, interstitial space monitoring and secondary containment for pressurized product delivery pipe connections.
- Q. Emergency situation.** "Emergency situation" means any unforeseen circumstances where the installation or replacement of an underground oil storage facility or tank is required to protect the public health, safety, and welfare.
- R. Existing underground oil storage facility or existing underground oil storage tank.** "Existing underground oil storage facility" or "existing underground oil storage tank" means any facility or tank, as defined in subsections VV and WW fully installed as of April 19, 1990, the effective date of P.L. 1990, Chapter 865, the location of which has not changed.
- S. Facilities used for consumption on the premises.** "Facilities used for consumption on the premises" means underground oil storage facilities not used to store motor fuels or waste oil, or in the marketing and distribution of oil to others. This includes underground heating oil storage facilities where the product is consumed on the premises or by the owner or operator of the facility.
- T. Facilities used for marketing and distribution.** "Marketing and distribution facility" means any underground oil storage facility where oil is stored for eventual resale.
- U. Free product.** "Free product" means non aqueous phase liquid oil or petroleum.
- V. Gallon.** "Gallon" means a unit of volume in the U.S. Customary System, used in liquid measure, equal to four (4) quarts, or 3.785 liters.
- W. Gasoline.** "Gasoline" means a volatile, highly flammable liquid with a flashpoint of less than 100° F obtained from the fractional distillation of petroleum.
- X. Heavy oil.** "Heavy oil" means forms of oil that must be heated during storage, including, but not limited to #5 and #6 oils.
- Y. Impressed current cathodic protection system.** "Impressed current cathodic protection system" means a cathodic protection system which relies on direct current supplied by a power source external to the electrode system.
- Z. In service.** "In service" means that a tank or facility has had product added or removed for its intended purpose during a consecutive 12 month period.

- AA. Leak.** "Leak" means a loss or gain of 0.1 gallons or more per hour as determined by a precision test or other tank and piping tightness test methods capable of detecting a 0.1 gallon or more per hour product loss or gain.
- BB. Monitoring well.** "Monitoring well" means a dug or drilled, cased well or other device used to detect oil in ground water and constructed as specified in Appendices F and G of this rule, that can be used for detecting the presence of at least one-eighth of an inch of oil.
- CC. Motor fuel.** "Motor fuel" means oil that is motor gasoline, aviation gasoline, #1 or #2 diesel fuel or any grade of gasohol typically used in the operation of a vehicle or motor engine.
- DD. Occurrence.** "Occurrence" means a contamination incident or prohibited discharge associated with one or more tanks or piping at an underground oil storage facility within one year.
- EE. Oil.** "Oil" means oil, oil additives, petroleum products and their by-products of any kind and in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, oil mixed with other waste, crude oils and all other liquid hydrocarbons regardless of specific gravity. For the purposes of this rule, oil shall not include propane.
- FF. Operator.** "Operator" means any person who is in control of, and responsible for the daily operation of an underground oil storage facility or tank.
- GG. Out-of-service underground oil storage facility or tank.** "Out-of-service underground oil storage facility" and "out-of-service underground oil storage tank" means any such facility or tank, as defined in subsections VV and WW, neither receiving nor dispensing oil, but to be returned to service or awaiting abandonment pursuant to Section 11 of this rule.
- HH. Owner.** "Owner" means any person who alone, or in conjunction with others owns an underground oil storage facility.
- II. Person.** "Person" means any natural person, firm, association, partnership, corporation, trust, the State and any agency of the State, governmental entity, quasi-governmental entity, the United States and any agency of the United States and any other legal entity.
- JJ. Piping line tightness test.** "Piping line tightness test" means a precision test, approved by the Commissioner, to determine the presence of a leak in the piping components of a facility. Volumetric and non volumetric tests may be used in accordance with the provisions of this subsection. Test methods shall be able to detect a leak of 0.1 gallons per hour with a probability of 95 percent or greater and a probability of false alarm of five (5) percent as determined by independent testing laboratory results using U.S. Environmental Protection Agency approved testing protocols. Hydrostatic piping tightness tests shall be conducted in accordance with the requirements of Appendix B. Piping line tightness test may also include non volumetric test methods where conducted in strict accordance with the manufacturer's protocols by manufacturer certified technicians, approved by the Commissioner and meeting the performance standards of this subsection.
- KK. Pneumatic test.** "Pneumatic test" means an air pressure test, performed in accordance with the requirements of Appendix C of this rule.

LL. Precision test. "Precision test" means a tank or piping line tightness test, approved by the Commissioner, that is capable of detecting a leak, a loss or gain of 0.1 gallon per hour with a probability of detection of 95 percent and a probability of false alarm of five (5) percent as determined by an independent testing laboratory using U.S. Environmental Protection Agency approved protocols.

MM. Primary sand and gravel recharge area. "Primary sand and gravel recharge area" means the surface area directly overlying sand and gravel formations that provide direct replenishment of ground water in sand and gravel and fractured bedrock aquifers. The term does not include areas overlying formations that have been identified as unsaturated and not contiguous with saturated formations.

NN. Private water supply. "Private water supply" means any dug, drilled or other type of well or spring or other source of water which collects water for human or animal consumption and is not a public water supply.

OO. Public drinking water supply. "Public drinking water supply" means any well or other source of water which furnishes water to the public for human consumption for at least 15 connections, regularly serves an average of at least 25 individuals daily at least 30 days out of the year, or which supplies bottled water for sale.

NOTE: The water source of restaurants, motels and other establishments providing water for human consumption are usually public drinking water supplies. For example, the water source for convenience stores offering water in coffee or other drinks to the public may fall under this definition. To verify if a well or other drinking water source is a public drinking water supply, contact the Maine Bureau of Health.

PP. Secondary containment. "Secondary containment" means a system installed so that any material that is discharged or has leaked from the primary containment is prevented from reaching the soil or ground water outside the system for the anticipated period of time necessary to detect and recover the discharged material. Such a system may include, but is not limited to, impervious liners with a maximum hydraulic conductivity of 10^{-6} cm/sec and compatible with the products stored, double-walled tanks and piping, or any other method approved by the Commissioner that is technically feasible and effective, and meets the requirements of Section 5(A)(2).

QQ. Sensitive geologic areas. "Sensitive geologic areas" means any of the following: 1) significant ground water aquifers, as defined in subsection RR below; 2) primary sand and gravel recharge areas, as defined in subsection MM above;) 3) locations within 1,000 feet of a public drinking water supply; or 4) locations within 300 feet of a private drinking water supply. Sensitive geologic areas around surface water bodies shall include all areas within 1000 feet of the intake point of a public water system, except on rivers and streams where it will only include areas within a 1000 feet of the intake point and upstream on either shore. All areas within 300 feet of the intake point in a lake, pond or other surface water body used for a private water supply system shall be considered a sensitive geological area, except on rivers and streams where it will only include areas 300 feet upstream on either shore of the intake point.

RR. Significant ground water aquifer. "Significant ground water aquifer" means a porous formation of ice-contact and glacial outwash sand and gravel, as identified by the current Maine Geological Survey maps, that contains significant recoverable quantities of water which is likely to provide drinking water supplies.

NOTE: Sand and Gravel Aquifer Maps are available from the Maine Geological Survey, Department of Conservation, State House Station #22, Augusta, Maine 04333.

SS. Site assessment. "Site assessment" means a determination at the time of facility or tank closure of the occurrence of a prohibited leak or discharge of oil, and of the presence or absence of oil contamination in the soils or the waters of the State. Site assessments shall be limited to the underground oil storage facility and shall use cost-effective, reliable and technically feasible investigation techniques.

TT. Statistical inventory analysis. "Statistical inventory analysis" or "statistical inventory reconciliation" means a process of evaluating the various sources of errors present in daily inventory records and capable of detecting a leak or discharge of 0.2 gallons per hour or 150 gallons within 30 days of occurrence with a 95 percent probability and a five (5) percent chance of a false alarm as determined by an independent testing laboratory using U.S. Environmental Protection Agency's standardized test procedures, conducted in accordance with the requirements of Section 5(D)(2).

UU. Tank tightness test. "Tank tightness test" means a precision test, approved by the Commissioner, that is capable of detecting a leak of 0.1 gallons per hour with a probability of 95 percent and a probability of false alarm of five (5) percent, as demonstrated by independent laboratory testing using the appropriate U.S. Environmental Protection Agency's approved testing protocol. Tank tightness tests may include volumetric tank tightness tests or non volumetric tank tightness tests. Tank tightness tests shall be conducted in strict accordance with manufacturer's operating procedures and any protocols identified by an independent testing laboratory as required to meet the performance standards of this subsection.

VV. Temporarily out of service facility or tank. "Temporarily out of service facility" and "temporarily out of service tank" means a facility which has received written permission from the Department to remain inactive for an additional twelve (12) months, in accordance with the requirements of Section 11 of this rule.

WW. Underground oil storage facility. "Underground oil storage facility," also referred to as "facility," means any underground oil storage tank or tanks, as defined in subsection WW, together with associated piping and dispensing facilities located under any land at a single location and used, or intended to be used, for the storage or supply of oil, as defined in this rule. Underground oil storage facility also includes piping located under any land at a single location associated with above ground storage tanks and containing 10 percent or more of the facility's volume capacity.

XX. Underground oil storage tank. "Underground oil storage tank," also referred to as "tank," means any container, 10% or more of which is beneath the surface of the ground and which is used, or intended to be used, for the storage, use, treatment, collection, capture or supply of oil as defined in this subchapter, but does not include any tanks situated in an underground area if these

tanks or containers are situated upon or above the surface of a floor and in such a manner that they may be readily inspected. For the purpose of this Rule, underground oil storage tanks do not include underground propane storage tanks., underground oil water separators, stormwater catch basins, and hydraulic lift tanks.

YY. Volumetric tank tightness test. "Volumetric tank tightness test" means a hydrostatic tank tightness test or precision test conducted at constant hydrostatic pressure at the bottom of the tank; where instrumentation noise shall be three (3) to five (5) times less than the minimum detectable leak rate; where temperature sensors must provide adequate spatial coverage of tank; and calibration of all instrumentation shall be able to be field checked. A volumetric or hydrostatic tank tightness test shall be performed in accordance with Appendix B of this rule.

ZZ. Waste Oil. "Waste Oil" means a petroleum based oil which, through use or handling, has become unsuitable for its original purpose due to the presence of impurities or loss of original properties. It must have sufficient liquid content to be free flowing. Waste oil is further defined in Chapter 860, Section 5 of Department's Waste Oil Management Rules.

AAA. Waste Oil Dealer. "Waste oil dealer" means any person in the business of transporting or handling more than 1,000 gallons of waste oil for the purpose of resale in a calendar month. A person who collects or stores waste oil on the site of generation, whether or not for the purpose of resale, is not a waste oil dealer.

BBB. Waste Oil Tank. "Waste oil tank" means an underground oil storage tank used for the storage of waste oil.

4. Registration of Underground Oil Storage Facilities

- A.** All underground oil storage tanks and facilities must be registered on a form provided by the Commissioner, regardless of use, size or type of petroleum product stored therein and regardless of whether the tanks and facilities are in service or out of service.
- B.** No person may install, or cause to be installed, a new or replacement underground oil storage tank or facility without first having: 1) filed registration materials in accordance with information requirements specified in subsection I, which have been deemed complete by the Commissioner at least five (5) business days prior to installation; 2) sent a copy of the materials and any subsequent amendments to the local fire department having jurisdiction; 3) retained a copy to be made available on site to the Department of Environmental Protection employees, agents or authorized representative and to municipal officials; and 4) paid the registration fee in accordance with the requirements of subsection J.
- C.** No person may retrofit an existing underground oil storage facility with leak detection, overfill prevention equipment or other design or installation changes without first having filed a registration amendment in accordance with subsection N.
- D.** Registration materials for new or replacement facilities or, retrofits for existing facilities, not in conformance with this rule, shall not be accepted by the Commissioner.

- E. Acceptable evidence that a new, retrofitted or replacement tank has been properly registered shall consist of receipt of a written acknowledgment from the Commissioner. The Commissioner will determine the completeness of the registration materials and notify the registrant within 5 business days of receipt.
- F. A person who installs, or causes to be installed, a new or replacement underground storage tank, or retrofits an existing tank, after 5 business days of the Commissioner's receipt of the registration form, without first having received confirmation that the registration is complete, does so at his own risk. If it is determined that the facility was not installed in accordance with the regulations, the tank owner shall bring the facility into conformance with these regulations.
- G. When an emergency situation occurs, the time requirement of subsection B may be waived by the Commissioner upon petition of a tank registrant if: 1) the registrant can demonstrate to the Commissioner that an emergency situation exists; and 2) the local fire department having jurisdiction has been notified by the registrant that the tank is being installed without the five (5) day notice due to an emergency situation.
- H. For existing facilities, the information required for registration shall be submitted to the Commissioner and a copy provided to the fire department having jurisdiction in accordance with this section. No person may operate, maintain or store oil in an underground oil storage facility, unless each underground oil storage tank at that facility has been properly registered with the Commissioner and a copy of the registration materials has been received by the local fire department having jurisdiction.
- I. Registrations shall be submitted on forms developed by the Commissioner, which shall contain the following information:
 - (1) The name, mailing address, and telephone number of the owner;
 - (2) The name, mailing address, and telephone number of the operator;
 - (3) The name, and telephone number of the facility;
 - (4) The location of the facility indicated as precisely as possible on a United States Geological Survey topographic map unless the facility is located within the boundaries of a Department of Transportation Urban Compact Zone in which case the location may be described by the direction and measured distance to the nearest 100 feet from an intersection of two named public roads;

NOTE: U.S. Geological Survey topographical maps are available at most outdoor sporting good stores and the Maine Geological Survey, Department of Conservation, State House Station #22, Augusta, Maine 04333. Urban Compact Zone boundaries are designated by signs along major roads.

- (5) The name, mailing address, and telephone number of an individual to contact with questions on the registration materials submitted;

- (6) The location of the facility relative to a sensitive geologic area, including: (a) whether a private water supply exists within 300 feet of the tanks; (b) if any person owns, operates, or utilizes any private water supply within 300 feet of the tanks; (c) whether a public water supply exists within 1,000 feet of the tanks; and (d) whether the facility is located on a primary sand and gravel recharge area or significant ground water aquifer, as defined by this rule.
- (7) The location of the facility relative to a 100 year flood plain as mapped by the Federal Emergency Management Agency (FEMA), or in the absence of such maps, as indicated by the presence of flood plain soils or the flood of record.

NOTE: FEMA maps are available at most municipal offices.

- (8) The size of each tank and each internal storage compartments (if more than one) measured in gallons;
- (9) The type of tank(s) and piping, including the materials used for construction and the type of pumping system;
- (10) The type of product(s) stored in each tank;
- (11) or a new or replacement facility or retrofitting of an existing facility, the installer's name, signature and certification number assigned by the Maine Board of Underground Storage Tank Installers;
- (12) For a new or replacement facility, a site drawing of the facility containing the location of all new or replacement tanks, including: (a) distance and direction measurements that are sufficient to locate all underground portions of the facility, (b) details of secondary containment and interstitial space leak detection monitoring equipment, (c) locations of any monitoring wells; and (d) all piping associated with the new or replacement facility.
- (13) The best estimate of the date of installation for each existing tank and its warrantee expiration date, if available;
- (14) For new and replacement tanks, the expiration date of the tank manufacturer's warrantee;
- (15) For retrofitting an existing underground oil storage facility, the information required in paragraphs 1,2,3,4,8,9 11 and 12 above shall be provided on the required registration amendment, as well as information on the type of leak detection; overfill prevention; or other equipment to be installed;
- (16) Any other information required by Federal law or regulation; and

NOTE: 1984 Amendments to Federal law (Subtitle I of the Resource Conservation and Recovery Act, Section 9002, et seq.) mandate a Federal underground tank notification program and specify informational requirements for that program. Registration forms are available from the Maine Department of Environmental Protection which meet all Federal and State informational requirements. A tank owner is not required to send a copy of the

completed form to the U.S. Environmental Protection Agency in addition to the Commissioner.

(17) Certification of the accuracy of the information by the tank owner or the owner's permanent full time employee. The certification cannot be signed by the installer or other subcontractor, unless the tank is owned by the installer.

- J. Registration fees.** The owner or operator of an underground oil storage facility shall pay an annual registration fee to the Commissioner of \$35 for each tank located at the facility, except that single family homeowners are not required to pay a fee for a tank at their personal residence. Annual payments must be paid on or before January 1st of each calendar year in order to maintain an effective registration for the upcoming year. Registrations for new tanks shall include payment of the annual registration fee. Registration of a replacement facility shall not require that an additional fee be paid or accompany the registration amendment if the annual fee has been previously paid.
- K. It is the responsibility of the facility owner to register all tanks.** Where the facility owner cannot be determined or is disputed, it shall be the responsibility of the property owner to register all facilities and tanks located on his property.
- L.** If the planned new or replacement tank or facility meets the definition of "hazardous activity" as stated in 38 MRSA, Section 482(2-C), and is not exempted pursuant to Chapter 371, Section 1(GG)(3) of the Department's Site Location of Development Rules, the completed registration materials will constitute acceptable preliminary notification to the Department for permitting as required by 38 MRSA, Section 483(1).
- M.** The Commissioner will assign a unique registration number to each facility and to each tank at a facility. These registration numbers shall be provided to the owner or operator and shall be used for annual re-registration and in all subsequent correspondence regarding registered facilities and tanks. The owner or operator shall post the registration number or certificate in a prominent location at the facility.
- N. Registration amendments.** The owner or operator of an underground oil storage tank shall file an amended registration form with the Commissioner and the local fire department having jurisdiction whenever there is a change in the information required pursuant to subsection I. Such amendments shall be received by the Commissioner within 10 days; except for retrofitting of leak detection, overfill and spill protection, or other underground oil storage facility equipment shall be submitted at least five (5) business days before installation. No fee shall be charged for filing an amended registration.
- O. Supplier notification requirement.** Any person who sells a tank intended to be installed as an underground oil storage tank shall notify the purchaser in writing of the purchaser's registration obligations under this section.
- P.** Wherever these rules require that information or notice be submitted to the Commissioner or Department, failure to provide such notice or information in the manner required by these rules or providing false information shall constitute a violation of these rules.

- Q. Notification at time of facility sale or transfer.** Prior to the sale or transfer of any real estate where an underground oil storage facility is located, the owner of the real estate shall file a written notice with the purchaser or transferee. The notice shall disclose the existence of the underground oil storage facility, its registration number or numbers, the real estate where the facility is located, whether or not the facility has been abandoned in place and that the facility is subject to this rule, including the registration requirements of this Section.

(5) Regulation of Underground Oil Storage Facilities Used to Store Motor Fuels or Used in the Marketing and Distribution of Oil

A. Applicability

- (1) This Section and its requirements apply to all facilities and tanks used to store motor fuel or used in the marketing and distribution of oil to others, except where noted below.
- (2) This Section does not apply to field constructed tanks and airport aviation fuel pressurized hydrant piping, which must comply with Sections 8 and 10 of this rule, respectively.

B. Design and installation standards for new and replacement facilities

(1) General design requirements

- (a) All new and replacement tanks shall be constructed of fiberglass, reinforced plastic (hereafter referred to as fiberglass), cathodically protected steel, or other equally non-corrosive material approved by the Commissioner. Piping and below ground ancillary equipment in contact with soil shall be constructed of fiberglass, cathodically protected steel or other corrosion-resistant or non-corrosive materials which may be approved by the Commissioner.
- (i) It shall be the responsibility of the facility owner to demonstrate to the satisfaction of the Commissioner that the materials are non-corrosive or corrosion resistant and meet or exceed the performance standards listed below.
- (ii) All new or replacement facilities shall be listed and constructed in accordance with the standards contained in the following:

Steel Tanks - Underwriters Laboratories 58 and 1746; or Underwriters Laboratories Canada S603.1 M 1985;

Fiberglass Tanks - Underwriters Laboratories 1316;

Cathodically Protected Tanks and Piping - National Association of Corrosion Engineers, RP-02-85 or Steel Tank Institute (STI) Tank Standard R892-89;

Composite Tanks - Association for Composite Tanks ACT-100, UL 1746 or Steel Tank Institute (STI) Composite Tank Standard (F894-89);

Non-Metallic and Fiberglass Piping - Underwriters Laboratories of Canada Guide ULC-107 or Underwriters Laboratories Subject 971.

Pipe Connectors - Underwriters Laboratories Standard 567;

Flexible Connectors - Underwriters Laboratories of Canada Standard CAN 4-S633-M84; and

Steel Piping - National Fire Protection Association Standards 30 or 31, American Petroleum Institute Publications 1615 and 1632, and National Association of Corrosion Engineers Standard RP-01-69.

NOTE: Fiberglass clad steel and other steel composite tanks must need not be provided with galvanic or impressed current cathodic protection if desired and constructed with secondary containment and interstitial space monitoring in accordance with the standards of this subsection.

(iii) Impressed current cathodic protection systems shall be designed by a corrosion expert and according to the standards described in the National Corrosion Engineers Recommended Practice RP 02-85, and installed under the supervision of a corrosion expert and by a Maine certified underground oil storage tank installer.

(b) All facility construction materials shall be chemically and physically compatible with the product to be stored.

NOTE: Gasoline underground oil storage facilities with an annual throughput of 100,000 gallons or greater are required to install vapor control equipment in accordance with Chapter 118 of the Department's air quality regulations (06-076 CMR c. 118).

- (2) Leak detection. All new and replacement facilities shall be designed to provide secondary containment for all facility components routinely containing product, including tanks, product piping and below ground ancillary equipment. New and replacement tanks and product piping shall have continuous interstitial space monitoring. Suction piping designed and installed in accordance with this rule is not required to have secondary containment. Interstitial space monitoring shall be able to detect a leak from the primary containment structure of at least 0.2 gallons/hour or 150 gallons within 30 days of a leak or discharge with a 95 percent probability of detection and a five (5) percent probability of false alarm, as determined by an independent testing laboratory using U.S. Environmental Protection Agency approved protocols.
- (3) Overfill and spill prevention equipment. New and replacement facilities shall include the following spill and overfill equipment:
- (a) A liquid tight spill catchment basin of a minimum capacity of three (3) gallons for each tank fill, which is sealed around the fill pipe and will collect any spillage during product delivery; and

- (b) Overfill prevention equipment that will automatically shutoff flow into the tank when the tank is no more than 95 percent full, or alert the transfer operator when the tank is no more than 90 percent full by restricting flow into the tank or triggering a high-level audible alarm.
- (4) General facility installation requirements
- (a) No person may install an underground oil storage facility or a portion thereof unless that person is a properly certified underground oil storage tank installer with the appropriate class of certification in accordance with Title 32 MRSA, sections 10001 through 10015, and has paid the required certification fee.
 - (b) No underground oil storage facility may be installed unless the entire facility has been registered in accordance with Section 4 of this rule.
 - (c) No underground oil storage tank or piping shall be installed within one (1) foot of the closest bedrock.
 - (d) All phases of the installation of an impressed current cathodic protection system must be conducted under the surveillance of a corrosion expert. The tank, piping and other portions of the facility other than the impressed current system may be installed by a Maine certified underground oil storage tank installer without such supervision.
 - (e) All new and replacement steel tanks and piping with cathodic protection shall be monitored within six (6) to 12 weeks of completion of installation by a cathodic protection tester in accordance with Appendix A of this rule.
 - (f) Certification of proper installation: Owners of new and replacement facilities shall ensure that the installer(s) provides certification to the Commissioner within 30 days of completion of installation; that the facility's materials, design and installation are in compliance with the requirements of this rule. This certification shall be provided in writing on a form provided by the Commissioner.
 - (g) No used or previously installed fiberglass or cathodically protected steel tank or piping may be re-installed, unless the owner has supplied the Commissioner with satisfactory documentation that the manufacturer will warranty that tank or piping against internal and external corrosion and structural failure for a period of at least ten (10) years, after which the tank or piping must be properly abandoned in accordance with the requirements of Section 11 of this rule. Re-installation of a tank or piping shall require an amendment of the facility's registration in accordance with Section 4(N) of this rule.
- (5) Installation requirements for new and replacement tanks.
- (a) New and replacement tanks and facilities shall be installed in conformance with the requirements contained in Appendix D, except field constructed tanks which are to be installed in accordance with Section 8 of this rule.
 - (b) If a tank is replaced, all associated piping not constructed of fiberglass, cathodically protected steel, or another equally non-corrosive material approved by the Commissioner

shall be replaced. Any replacement piping shall be designed and installed in accordance with this rule. If product piping is replaced and structural damage to the associated tank has occurred, impairing its physical integrity, the tank shall also be replaced if not constructed of fiberglass, cathodically protected steel, or other non corrosive material approved by the Commissioner. Any replacement tank shall be designed and installed in accordance with this rule. Repairs of damaged fiberglass, cathodically protected steel and other Commissioner approved non-corrosive material tanks may only be made if conducted in accordance with Sections 5(D)(14) or (15). Tanks that can not be repaired shall be abandoned in accordance with Section 11.

(6) Installation requirements for new and replacement piping.

- (a) All underground piping shall be designed and installed in conformance to the requirements contained in Appendix E, except airport aviation fuel pressurized hydrant piping, which must comply with Section 10 of this rule.
- (b) All underground piping in contact with soil shall be constructed of fiberglass or cathodically protected steel. Other non-corrosive materials may be used when approved by the Commissioner.
- (i) It shall be the responsibility of the tank owner to demonstrate to the satisfaction of the Commissioner that the materials are non-corrosive.

NOTE: Galvanized piping does not meet the requirement for corrosion protection of tanks and piping, and does not meet the criteria for cathodic protection as stated in the National Association of Corrosion Engineers, Recommended Practices 02-85.

- (ii) All new or replacement non-metallic product piping shall be listed by Underwriters Laboratories for Underground use. Cathodically protected piping shall be constructed and installed in conformance with the National Association of Corrosion Engineers, Recommended Practices, Publication No. 02-85 or Steel Tank Institute (STI) Standard RP 892-89.
- (iii) Other than field coating limited to fill pipes and piping joints, field coating of steel pipe for product delivery lines is prohibited except where supervised and inspected by a corrosion expert.
- (c) Product lines shall be installed in a single trench between the tank area and each pump island. Underground vent lines shall be installed in a single trench. All product and vent lines shall slope toward the tank area at a minimum of 1/8 inch per foot.
- (d) Secondary containment and cathodic protection of fill pipes is not required provided the fill pipe is constructed of Schedule 40 steel and is uniformly coated with a minimum of 1/8 inch of fiberglass resin, bitumastic coating or epoxy coating. The pipe surface shall be properly prepared and the coating allowed to cure.

- (7) Installation requirements for leak detection and overflow/spill prevention equipment. Leak detection and overflow/spill prevention alarms and shutoff equipment shall be installed prior to the start of the facility's operation and in accordance with manufacturer specifications, including proper calibration of electronic equipment.

C. Retrofitting requirements for existing facilities

- (1) Existing facility owners shall retrofit or institute a leak detection method, capable of detecting a leak within 30 days of occurrence with a probability of detection of 95 percent and a five (5) percent probability of a false positive as determined by an independent testing laboratory using U.S. Environmental Protection Agency approved testing protocols, and listed in paragraph 2 below. Facility owners shall have leak detection in operation by December 1, 1990 for facilities with pressurized piping and by December 1, 1991 for facilities with suction piping. Existing facilities with secondary containment with interstitial space monitoring for all tanks, product piping and associated below ground ancillary equipment as well as tanks installed with an impervious barrier sloped to a monitoring well in accordance with Appendix G are considered to meet this requirement. Facilities with suction piping installed such that the piping is sloped so that the contents of the pipe will drain back into the tank if suction is lost, and only one check valve is located in a piping line with the check valve located directly below and as close as possible to the pump, may have until December 1, 1993 to implement leak detection. Where an existing tank has leak detection meeting the requirements of this rule, the associated product piping shall be provided leak detection in accordance with the time schedule and other provisions of this subsection. If the mandatory removal date for a non-conforming facility required by Title 38 MRSA subsection 563(A-1) precedes the leak detection compliance schedule outlined above; the facility owner shall comply with the removal schedule in Title 38 MRSA, subsection 563(A-1).
- (2) Acceptable leak detection methods are any one of the following:
 - (a) Monthly reconciliation of daily product inventory data in accordance with Appendix I and an annual precision test of all tanks and piping. All facilities intending to use or using this method must install drop tubes in the fill pipes. An annual statistical inventory analysis conducted in accordance with Section 5(D)(2) capable of detecting a leak rate of 0.1 gallons, per hour with a 95 percent probability of detection and five (5) percent probability of false alarm may be substituted for a precision test for the purposes of this paragraph. In addition all pressurized piping shall be retrofitted with an automatic in-line leak detector capable of detecting a leak of three (3) or more gallons per hour at 10 pounds per square inch line pressure within one (1) hour of its occurrence with a 95 percent probability and a five (5) percent probability of false alarm.
 - (b) Continuous or manual monitoring for free product in ground water monitoring well(s) installed in the excavated area, and as close as technically feasible around the tank or tanks, accompanied by one of the methods listed below in paragraph 2(e) of this subsection to detect a leak from piping not installed in accordance with Section 5(B)(2). Continuous monitoring devices and manual monitoring methods must detect the presence of at least one-eighth of an inch of free product on the ground water surface in monitoring wells. Monitoring wells shall be installed in accordance with Appendix F and the following requirements:

- (i) The ground water table is not more than 20 feet from the ground surface; and
 - (ii) Soils between the tank and monitoring wells shall consist of gravel, coarse to medium sands, or other permeable materials with a hydraulic conductivity of not less than 0.01 centimeters per second.
- (c) Continuous vapor monitoring in the unsaturated soil zone of all elements of the facility, using sufficient sampling points to detect a leak or discharge of oil from any point in the facility. Vapor monitoring must meet the following requirements:
- (i) The method shall test for oil vapors or tracer compounds within the soil gas of the excavation zone;
 - (ii) Materials used as backfill are gravel, sand or crushed rock and are sufficiently porous to readily allow diffusion of vapors from leaks or discharges into the excavation area, with a hydraulic conductivity of 10^{-3} cm/second or greater;
 - (iii) The stored oil product or any tracer compound placed in the facility, is sufficiently volatile to result in a vapor level that is detectable by the monitoring devices located in the excavation zone. All tracer compounds shall be approved by the Commissioner prior to use.
 - (iv) The measurement of vapors by the monitoring device is not rendered inoperative by the ground water table, rainfall, or soil moisture or other known interferences so that a leak or discharge could go undetected for more than 30 days. The ground water table shall be below the tank or piping excavation zone.
 - (v) The level of background contamination in the excavation zone or elsewhere in close proximity to the facility will not interfere with the method used to detect leaks or discharges.
 - (vi) The facility's excavation zone is assessed by a Maine certified installer or the equipment manufacturer's representative to ensure compliance with the suitability requirements above in this paragraph, and to establish the number and locations of vapor monitoring wells or ports such that leaks or discharges will be detected from any portion of the facility that routinely contains product. At a minimum one vapor monitoring well shall be located within five (5) feet of each pump and dispenser, and at each end of each tank.
 - (vii) Vapor monitoring wells or ports are clearly marked and secured to avoid unauthorized access or tampering.
 - (viii) All monitoring components shall meet manufacturer's specifications and shall be installed according to manufacturer specifications.
- (d) Automatic tank gauging that can detect a 0.2 gallon per hour loss, plus daily product inventory conducted in accordance with Section 5(D) of these rules. To detect a leak or discharge from piping not installed in accordance with Section 5(B)(2), one of the methods listed below in paragraph C(2)(e) of this section shall also be implemented.

- (e) When an existing tank is to be monitored for leaks by ground water monitoring wells or in-tank gauging, associated existing piping shall be monitored for leaks using one of the following methods:
 - (i) Continuous vapor monitoring in accordance with the provisions of this rule;
 - (ii) Secondary containment with interstitial space monitoring;
 - (iii) For pressurized piping, retrofit with an automatic in-line leak detector and one of the leak detection methods described in (i) or (ii) above, or an annual piping line tightness test; or
 - (iv) Replacement with self monitoring suction piping designed and installed in accordance with requirements for new and replacement piping contained in this section and Appendix E.
- (f) Where only existing piping requires leak detection, one of the following methods shall be used:
 - (i) Continuous vapor monitoring;
 - (ii) Secondary containment with interstitial space monitoring; or
 - (iii) For pressurized piping, retrofit with an automatic in-line leak detector, and one of the leak detection methods described in (i) or (ii) above or an annual piping line tightness test; or
 - (iv) Replacement with self monitoring suction piping designed and installed in accordance with requirements for new and replacement piping contained in this Section and Appendix E.
- (g) Other leak detection systems approved by the Commissioner that can detect a 0.2 gallon per hour leak rate or a leak of 150 gallons within 30 days of occurrence with a 95 percent probability and a five (5) percent chance of false alarm, as determined by an independent testing laboratory using standard U.S. Environmental Protection Agency (EPA) test protocols.
- (3) Overfill and spill prevention equipment shall be retrofitted at all facilities constructed of fiberglass, cathodically protected steel or other non-corrosive materials approved by the Commissioner in accordance with Section 5(B) by December 1, 1993.
- (4) Facilities that do not comply with the retrofitting requirements of this subsection shall cease operation on the date upon which retrofitting was required, and close in accordance with section 11 of this rule.

D. Monitoring, maintenance and operating procedures for existing, new and replacement facilities

- (1) Daily inventory requirements. The owner or operator of facilities used for the storage of motor fuel or for the marketing and distribution of oil shall maintain and reconcile daily inventory for each day that oil is being added to or withdrawn from the facility or tank. Double-walled tanks with interstitial space monitoring meeting the requirements of Section 5(B)(2) are exempt from maintaining daily product inventory.
- (a) Daily inventory shall be conducted so as to be able to detect a leak or discharge of at least 1.0.5% of throughput on a monthly basis and shall include all the following:
- (i) The daily measurement of product and water levels in each tank for each day product is added or removed. Measurement of product levels may be made by a stick gauge reading. Water level measurements may be made by using water paste and a gauge stick. Electronic or mechanical level measuring devices which measure product and water levels are also acceptable. Product level and water levels are to be measured to the nearest one-eighth of an inch (1/8").
 - (ii) The measurement of product levels, before and after any deliveries.
 - (iii) Product dispensing is metered and recorded within Maine Department of Agriculture's weight and measure standards or an accuracy of six (6) cubic inches for every five (5) gallons of product withdrawn.
 - (iv) Daily reconciliation of tank measurements and pump meter readings shall be performed to determine daily loss or gain of product. The reading of pump meter readings and product delivery receipts shall not in itself constitute adequate inventory records.
 - (v) A log book shall be kept at the facility which includes each measurement and the initials of the individual taking and recording the pump meter readings and the actual product and water level measurements.
- (b) All inventory data shall be summarized monthly and shall include the total cumulative loss or gain for the preceding month.

NOTE: See Appendix I for an example of a daily inventory data sheet. Practices described in the American Petroleum Institute Publication 1621, "Recommended Practice for Bulk Liquid Stock Control at Retail Outlets", may be used, where applicable, as guidance in meeting the daily inventory requirements of this rule.

- (c) All inventory data and summaries shall be retained for a period of at least three (3) years either at the facility or at the facility owner's place of business and available to the Department's employees or authorized representatives and to municipal officials upon request.
- (2) Statistical Inventory Analysis
- (a) The owner of each tank used for the storage of motor fuel or the marketing and distribution of oil shall be responsible for having an annual statistical inventory analysis

performed for each of his tanks, and reporting the results of the analysis to the Commissioner on or before July 1 of each year for those facilities located in a municipality whose first letter is A-L, and before October 1 of each year for those facilities located in a municipality whose first letter is M-Z and on or before that date annually thereafter. An annual statistical analysis conducted to meet the requirements of subsection 5 C(2)(a) may be used to comply with the requirements of this paragraph. Annual statistical inventory analysis is not required for double-walled tanks equipped with interstitial space monitoring.

Such an analysis shall include an evaluation of the various sources of error present in daily inventory records, including the following:

- (i) identifying and removing large measurement errors;
 - (ii) identifying unrecorded additions or removals of oil;
 - (iii) detecting errors in metering oil from the tank;
 - (iv) estimating the potential for temperature differential to induce spurious trends or conceal real trends;
 - (v) establishing that residual errors contain no systematic components and reflect on the normal errors of measurement;
 - (vi) evaluating the quality of the data provided and the adequacy of operator procedures to detect leaks if present;
 - (vii) identifying persistent daily physical loss which could be consistent with leakage; and
 - (viii) determining values and dates for any delivery errors and any unexplained one time gains or losses.
- (b) The report of the results of the analysis shall also contain the following facility information:
- (i) Name of the facility;
 - (ii) Municipality in which the facility is located;
 - (iii) Name of the owner;
 - (iv) Registration numbers assigned by the Commissioner to the facility and to the tanks;
 - (v) Certification by tank owner and the agent conducting the analysis that the results are true and accurate to the best of his or her knowledge; and
 - (vi) Dates of inventory data used in the analysis.

- (c) The requirement for statistical inventory analysis shall only be met if the inventory records submitted are capable of being analyzed with conclusive results. The following attributes shall constitute cause for invalidation of an analysis:
 - (i) Excessively large and other clearly erroneous measurements of inventory-on-hand;
 - (ii) Excessively large unexplained removals or additions of product;
 - (iii) Failure to take daily readings of inventory-on-hand;
 - (iv) Excessive data recording errors; or
 - (v) Evidence of the use of an incorrect conversion chart or persistent faulty gauging.
 - (d) A statistical inventory analysis resulting in an inconclusive finding due to poor quality product inventory readings, pump error, tank tilt or other reasons shall be redone, following correction of likely errors, using new daily inventory data and submitted to the Commissioner within 75 days of receipt of the initial statistical analysis.
 - (e) All tank owners shall maintain at the facility or the owner's place of business for a period of 3 years the results of all annual statistical inventory analysis for each underground storage tank. These results shall be made available to the Department of Environmental Protection employees or authorized representative and to municipal officials upon request.
 - (f) Only statistical inventory analyses by methods meeting the definition and performance standards of Section 3 (TT) shall be accepted by the Commissioner.
- (3) Operation and Monitoring Requirements for Galvanic Cathodic Protection Systems
- (a) All galvanic cathodic protection systems shall be operated and maintained to continuously provide adequate corrosion protection to the metal components of the facility routinely storing or containing oil, and in a manner that ensures that no leaks occur during the operational life of the facility. Adequate corrosion protection shall be indicated by a cathodic protection test reading of at least negative 0.85 volts. Steel composite tanks without secondary containment and continuous interstitial space monitoring shall comply with this requirement.
 - (b) All cathodically protected tanks and piping shall have an accurate structure to soil potential reading performed by a qualified cathodic protection tester upon installation or repair and annually thereafter.
 - (c) When repairs to the cathodic protection systems are made or underground work is performed at the site, the cathodic protection shall be monitored 6 to 12 weeks after such work has been completed, to assure that the system is functioning properly.
 - (d) Monitoring shall be performed in accordance with the requirements of Appendix A.

- (e) Repairs of a galvanic cathodic protection system shall be completed by a Maine Certified Underground Oil Tank Installer.
- (f) The results of all monitoring and repairs shall be kept in a logbook at the tank owner's place of business or at the facility.

(4) Monitoring Requirements for Impressed Current Cathodic Protection Systems

- (a) All impressed current cathodic protection systems shall be operated and maintained to continuously provide adequate corrosion protection to all underground metal components of the facility routinely storing or containing oil, and in a manner that ensures that no leaks occur during the operating life of the facility. Adequate corrosion protection shall be indicated by a cathodic protection test of at least a negative 0.85 volts.
- (b) A monthly inspection shall be performed of the rectifier meter on all facilities utilizing the impressed current system of corrosion protection. All readings and repairs shall be recorded in a log book which must be kept at the owner's place of business or at the facility for a period of at least 3 years.
- (c) A cathodic protection tester shall measure the structure to soil and structure-to-structure potentials, the rectifier voltage and current output as part of an on-site test and inspection at least once per year.
- (d) Repairs to an impressed current cathodic protection system shall be supervised by a corrosion expert.

NOTE: National Association of Corrosion Engineers Standard RP-02-85, "Control of External Corrosion on Metallic Buried, or Partially Buried, or Submerged Liquid Storage Systems", may be used as guidance to comply with this subsection.

- (5) Operation, maintenance and testing of in-line leak detectors. In-line leak detection devices shall be maintained to properly operate in accordance with this rule at all times while the piping contains oil. All in-line leak detectors shall be tested for proper operation in accordance with manufacturer's instructions upon installation and at least once each calendar year thereafter. Tests of in-line leak detectors shall be conducted by a manufacturer trained representative of the owner, qualified tank testing professional or a certified underground oil storage tank installer. Improperly operating leak detectors shall be repaired or replaced by a certified underground oil storage tank installer, the manufacturer's representative or manufacturer trained representative of the owner within 30 days. A log of all tests, maintenance, and repairs shall be maintained by the owner at the facility or the owner's place of business for a period of at least three (3) years.

(6) Overfill and Spill Prevention

- (a) All product deliveries shall be monitored at all times by a representative of the owner, operator or oil transporter to who must be physically present except where an automatic shutoff device is installed and operating on the tank in accordance with this rule.

- (b) Operation, maintenance and testing of overfill and spill prevention equipment. All overfill and spill prevention equipment shall be maintained to properly operate at all times while the facility is in operation, and in accordance with the requirements of this rule. Overfill and spill prevention alarms and shutoff systems shall be tested at least annually and recalibrated, if necessary, in accordance with manufacturer's instructions. Testing and recalibration shall be conducted by a manufacturer trained representative of the facility owner or operator, a Maine Certified Underground Oil Tank Installer or an authorized representative of the manufacturer. Repairs of automatic overfill and spill prevention alarm and shutoff systems shall be done by a Maine Certified Underground Oil Storage Tank Installer, a manufacturer trained and certified representative of the owner or the manufacturer's representative within 30 days. A log recording all tests, maintenance and repairs shall be maintained by the owner at the facility or the owner's place of business for three (3) years. Spill catchment basins shall be inspected and, if necessary, cleaned before each product delivery.

NOTE: Underground Tanks and facilities with more than 42,000 gallons capacity are required to maintain a Spill Prevention Control and Countermeasure Plan (SPCC Plan) in accordance with U.S. Environmental Protection Agency regulations, 40 CFR, Part 112.

- (7) Operation, maintenance and testing of leak detection equipment. All leak detection equipment shall be maintained to operate at all times while the facility contains oil, and in accordance with the performance standards of this rule and the manufacturer's instructions. Continuous, automated or electronic leak detection equipment shall be tested at least annually and, if needed, recalibrated. Testing and recalibration shall be conducted in accordance with the manufacturer's instructions by either a manufacturer trained representative of the facility owner or operator, a Maine certified underground oil storage tank installer or an authorized representative of the manufacturer. Repairs of continuous, automated or electronic leak detection equipment shall be conducted by a Maine certified underground oil storage tank installer, a manufacturer trained and certified representative of the owner, or the manufacturer's representative within 30 days. A log of all tests, maintenance and repairs shall be maintained by the owner at the facility or the owner's place of business for a period of three (3) years and be available for inspection by personnel and authorized agents of the Commissioner.
- (8) Precision Testing
- (a) When annual precision testing of a facility is relied upon to comply with the leak detection requirements of Section 5(C)(2) for an existing facility, the precision test results shall be maintained by the owner at the facility or the owner's place of business for a period of three (3) years and be available for inspection by personnel and authorized agents of the Commissioner.
- (b) The Commissioner may require precision testing as defined in this rule of all tanks and piping at a facility showing evidence of a possible leak, as defined in Section 5(D)(9) below.

- (c) Results of all precision tests conducted in accordance with the requirements of this paragraph, the leak detection requirements of Section 5(C)(2)(a), or wherever required by this rule, must be submitted to the Commissioner or his representative by the facility owner and the person who conducted the test.

(9) Evidence of a Leak

- (a) Evidence of a leak shall include, but not be limited to, any one of the following:

- (i) A positive analysis for oil or evidence of oil in a ground water monitoring well or monitoring results from any leak detection equipment or method indicating a possible leak, release or discharge;
- (ii) Any sheen or other visual or olfactory evidence of oil found in a monitoring well, or in water or soil in a tank or piping excavation or a test pit;
- (iii) Any unexplained loss or gain of .5 percent of the throughput of each storage system over a 30 day period, as indicated by the recording and reconciliation of daily inventory records;
- (iv) Failure of a piping line tightness test, as defined in Section 3(JJ) or a tank tightness test as defined in Section 3(UU), which indicate a leak of 0.1 gallons per hour or greater;
- (v) Failure of a precision test as defined in Section 3 (LL), other than a piping or tank tightness test which indicates a loss or gain of 0.1 gallons per hour or great;
- (vi) Unexplained losses detected through a statistical analysis of inventory records or an indication in the statistical inventory analysis that the inventory data provided were insufficient to perform an accurate analysis;
- (vii) The excessive accumulation of water in a tank, evidenced by a rise in water level of greater than one-half of an inch (1/2") for an eight (8) to 12 hour period, except where the cause of the water accumulation is due to stormwater runoff intrusion and promptly corrected;
- (viii) Reduced flow in a remote pumping system equipped with an in-line leak detector;
- (ix) Pump hesitation, vibration, meter stripping or air elimination, attributable to a loss of prime for product lines which operate under a suction system;
- (x) Discovery of oil off-site of a facility on or under abutting properties, including nearby utility conduits, sewer lines, buildings, drinking water supplies, ground water and soil;
- (xi) Evidence of the presence of oil or water entering into the interstitial space of a secondary containment facility, or a significant drop in the liquid level of a hydrostatically monitored interstitial space. as specified by the tank or leak detection equipment manufacturer's instructions; and

- (xii) Any actual leaks or discharges of oil found on the premises, including, but not limited to, spills, overfills and leaks, whether or not cleaned up.
- (10) Product compatibility. Only oil and petroleum products chemically and physically compatible with the materials from which the tank, piping and other components of the facility routinely containing product are constructed, may be stored. Prior to storing alcohol blended fuel exceeding 10 percent alcohol in fiberglass tanks or piping, the owner must contact the tank and piping manufacturers to determine its long-term compatibility with the composition of the fiberglass resins. Written documentation of product compatibility for alcohol blended fuel and a fiberglass facility shall be maintained at the owner's place of business or the facility.
- (11) Leak or Discharge reporting requirements
 - (a) A tank owner or operator shall report to the Commissioner as soon as possible, but no later than within 24 hours any evidence of a leak or discharge of oil, including but not limited to those listed in Section 5(D)(9).
 - (b) A certified underground tank installer or remover finding evidence of a leak or discharge of oil must report it to the facility owner or operator, and the Commissioner, as soon as possible, but no later than within 24 hours of discovery.

NOTE: TO REPORT A LEAK, SPILL OR OTHER DISCHARGE OF OIL, CALL TOLL FREE 1-800-482-0777.

- (c) Notwithstanding the above, discharges of 10 or less gallons of oil that occur above the surface of the ground, and not reaching ground water or surface waters of the State need not be reported to the Commissioner if the owner or operator complies with all of the following requirements:
 - (i) The discharge is fully cleaned up within 24 hours of discovery.
 - (ii) A written log is maintained at the facility or the owner's place of business in Maine recording for each discharge the date of discovery, its source, the general location of the discharge on the facility, the date and method of cleanup, and the signature of the facility owner or operator certifying the accuracy of the log.
 - (iii) The spill log shall be readily available for inspection by personnel and authorized agents of the Commissioner.
 - (d) Pursuant to Title 38 M.R.S.A., Section 568 (4), any person who causes or is responsible for a discharge to ground water shall not be subject to any fines or civil penalties for the discharge if the person promptly reports and removes that discharge in accordance with the rules and orders of the Commissioner, and the Board.
- (12) Manual sampling of ground water monitoring wells

- (a) Where monitoring wells have been installed at an underground oil storage facility and are intended to meet the leak detection requirements of Section 5(C), the owner or operator must sample those wells weekly by withdrawing a sample from each monitoring well on site and examining the sample visually for a sheen or other evidence of oil, and by smelling the sample for the odor of "oil." Weekly sampling shall be performed in accordance with the procedures required in Appendix H.
- (b) Records of each sampling shall be maintained in a log book at the facility for a period of three (3) years. The log book shall include the date and time of sampling, the initials of the person performing the sampling, and a record of the inspection of all monitoring well samples. The log book shall be available upon request to any Department of Environmental Protection employee, agent or authorized representative and to any municipal official.

NOTE: A sample log sheet is provided in Figure 3 of Appendix H.

- (c) Upon discovery of any evidence of a possible leak as defined in Section 5(D)(9) of this rule, the owner of the tank shall cause notice to be given to the Commissioner as soon as possible but not later than 24 hours from the time of discovery. The tank owner shall then obtain samples from all ground water monitoring wells for laboratory analysis in accordance with the procedures required in Appendix H. Investigation and corrective action requirements of Section 12 of this rule shall be followed.
- (d) Where laboratory analysis is required, all monitoring wells shall be sampled and the samples analyzed for the presence of methyl tertiary butyl ether (MTBE), benzene and total gasoline or total fuel oil in accordance with Department laboratory methods by a laboratory with a detection limit of no greater than 10 ppb total gasoline, 20 ppb MTBE, 5 ppb benzene and 50 ppb total fuel oil. Other comprehensive hydrocarbon laboratory methods may be used with prior approval by the Commissioner. The monitoring wells shall be sampled and all samples shall be handled in conformance with the requirements contained in Appendix H. The results of all hydrocarbon analysis shall be maintained at the facility for a period of not less than three (3) years. The detection of hydrocarbons in concentrations which are greater than the above detection limits shall be reported to the Commissioner by the facility owner or operator as soon as possible, but not later than 24 hours from the time of discovery.

(13) Manual interstitial space monitoring

- (a) Where secondary containment is provided for leak detection without continuous monitoring, the owner or operator shall sample the interstitial space once per week for evidence of a leak or discharge of oil, and the inflow of ground water.
- (b) The interstitial space of double walled tanks shall be monitored in accordance with the instructions of the tank or leak detection equipment manufacturer.
- (c) When piping with secondary containment sloped to a monitoring sump or man-way has been installed, the owner or operator shall physically check the man-way or sump weekly for visual evidence of oil.

- (d) For facilities where secondary containment is provided by an excavation liner, the monitoring wells shall be sampled weekly for evidence of a leak or discharge in accordance with the procedures for monitoring well sampling outlined in Section 5(D)(112).
- (e) A record of each sampling event shall be maintained in a log book at the facility or the owner's place of business and for a period of at least three years. The log shall include the date and time of each sampling, what was found, and the initials of the person doing the sampling. The log book shall be available for inspection by personnel or authorized agents of the Commissioner.

(14) Interior relining of new and existing facilities

- (a) Tanks may be relined provided that prior to lining the tank has passed a precision test and is free of perforations, except that fiberglass tanks which have failed may be relined or repaired if the cause of the failure will be completely repaired to the satisfaction of the Commissioner and a warranty is provided by the person performing the repairs. The warranty shall be for a minimum of ten (10) years and shall warranty the tanks against internal and external corrosion and structural failure. A fiberglass tank that once failed a precision test, was subsequently lined, shall be precision tested prior to going back into operation. In a case where a fiberglass tank with a leak is lined the tank shall be properly abandoned pursuant to the requirements contained in Section 11 of this rule upon expiration of the warranty.
- (b) The following requirements shall also apply to relining activities:
 - (i) After relining, fiberglass tanks must pass a precision test;
 - (ii) The material which is used as a liner must be compatible with the product to be stored in the tank;
 - (iii) The lining procedure must be performed in accordance with the procedures outlined in American Petroleum Institute Recommended Practice No. 1631;
 - (iv) Piping shall not be relined; and
 - (v) The owner of the facility shall amend the facility's registration in accordance with Section 4(N) of this rule and maintain records of relining for the remaining operating life of the lined tank that demonstrate compliance with this paragraph.

(15) Repairs other than relining

- (a) Repairs are allowed in accordance with this paragraph to tanks and piping constructed of fiberglass, cathodically protected steel and other non-corrosive materials approved by the Commissioner.
- (b) Repairs allowed of tank and piping not constructed of fiberglass, cathodically protected steel or other noncorrosive materials approved by the Commissioner are limited to

correcting loose fittings and joints. Repairs of corrosion induced leaks are prohibited. Steel tanks and piping with corrosion induced leaks must be closed in accordance with Section 11 of this Rule.

- (c) Repairs to fiberglass, cathodically protected steel and other approved noncorrosive material tanks and piping must be properly conducted by a Maine certified underground tank installer or by the manufacturer's authorized representative.
- (d) Tank and piping repairs are to be conducted in accordance with manufacturer specifications or in accordance with the National Fire Protection Association Standard 30, "Flammable and Combustible Liquids Code".
- (e) Repairs jeopardizing the manufacturer's original warrantee are prohibited.
- (f) Repaired tanks and piping shall be precision tested before going back into operation, except where the repair only included tightening of a loose union, coupling or flexible connector.
- (g) Repairs to a cathodic protection system shall be conducted in accordance with the National Association of Corrosion Engineers recommended Practice 02-85. Repairs to a galvanic cathodic protection systems shall be conducted by a certified installer. Repairs to an impressed current, cathodic protection system shall be supervised by a corrosion expert.
- (h) Within six (6) to twelve (12) weeks of a repair to a cathodic protection system, the owner or operator must have a test of the system in accordance with Appendix A, conducted by a cathodic protection tester.
- (i) Owners must maintain records of each repair of the type listed in this paragraph for the remaining life of the facility.

(16) Financial responsibility requirements

- (a) The owner or operator of a new, replacement or existing tank or facility shall demonstrate to the Commissioner that the owner or operator has the ability to assure the costs of corrective action and for compensating third parties for bodily injury, property damage and loss of income caused by sudden and non-sudden releases, leaks or discharges from an underground oil storage facility.
- (b) Owners or operators shall maintain an ability to assume financial responsibility in accordance with this rule in at least the following per-occurrence amounts.
 - (i) Owners or operators of all marketing or distribution facilities and motor fuel facilities that handle an average of more than 10,000 gallons of oil per month based on the previous year's throughput shall maintain \$1 million.
 - (ii) All other owners or operators of marketing, distribution and motor fuel underground oil storage facilities shall maintain \$500,000.

- (c) Owners or operators shall maintain an ability to assume financial responsibility in accordance with this rule in at least the following annual aggregate amounts.
 - (i) For owners or operators of one (1) to 100 tanks, \$1 million; and
 - (ii) For owners or operators of 101 or more tanks, \$2 million.
- (d) The amounts of assurance required under this Section exclude legal costs.
- (e) A facility owner or operator may use any one or combination of the financial responsibility mechanisms listed below in meeting the requirements of subparagraphs a through d above and of the U.S. Environmental Protection Agency's financial responsibility requirements for underground storage tanks containing petroleum.
 - (i) Self insurance when meeting the financial test of self insurance in 40 CFR, PART 280.95
 - (ii) Guarantee meeting the requirements of 40 CFR, Part 280.96;
 - (iii) Liability insurance or risk retention group coverage meeting the requirements of 40 CFR, Part 280.97;
 - (iv) Surety bond meeting the requirements of 40 CFR, Part 280.98;
 - (v) Letters of credit meeting the requirements of 40 CFR, Part 280.99;
 - (vi) Trust fund meeting the requirements of 40 CFR, Part 280.102; or
 - (vii) The Maine Ground Water Oil Cleanup Fund in accordance with the eligibility requirements and financial assurance limits of Title 38 MRSA, subsections 568-A and 569, in combination with one or more of the other above mechanisms to assure full coverage of third party damage liability in accordance with the minimum financial assurance requirements of section 5(D)(16)(a) and 5(D)(16)(b) above.
- (f) An owner or operator may replace one financial assurance mechanism for another, provided that at all times the owner or operator maintains an effective financial assurance mechanism or combination of mechanisms that satisfy the requirements of this paragraph.
- (g) Financial assurance mechanisms may be canceled or not renewed in accordance with 40 CFR, Part 280.105.
- (h) The facility owner or operator shall maintain financial responsibility records at the facility or at the owner's place of business in accordance with 40 CFR Part 280.17.
- (i) In the event of bankruptcy or other financial responsibility incapacity of the facility owner or operator, or a provider of financial assurance; the notification and financial responsibility replacement requirements of 40 CFR, Part 280.110, shall be met.

- (j) An owner or operator is no longer required to maintain financial responsibility under this rule after a tank or facility has been properly closed in accordance with Section 11 of this rule, and if corrective action is required by the Commissioner, after the corrective action has been completed to the Commissioner's satisfaction and in accordance with Section 12. and other rules or orders of the Commissioner and Board.

(17) No oil product shall be stored in a facility of a design or construction with which it is not chemically or physically compatible.

E. Facility closure and abandonment. The closure, abandonment, or temporary discontinuance of service of a facility or any part thereof shall be conducted in accordance with the requirements of Section 11 of this rule.

6. Regulation of Heating Oil Facilities Used for Consumption on the Premises or by the Owner or Operator

A. Applicability

- (1) This section shall apply to all underground heating oil or process oil storage facilities used for consumption on the premises or by the owner or operator of the facility.
- (2) This section of the rules does not apply to motor fuel, marketing, distribution facilities, waste oil facilities, field constructed tanks; or heavy oil facilities except where specifically stated otherwise.

B. Design and installation requirements for new and replacement facilities

(1) General design requirements.

- (a) The installation of new or replacement tanks and piping constructed of bare steel or asphalt coated steel is prohibited.
- (b) All new and replacement tanks shall be constructed of fiberglass reinforced plastic (hereafter referred to as fiberglass), cathodically protected steel, or other non-corrosive material approved by the Commissioner. Piping and other below ground ancillary equipment in contact with soil shall be constructed of fiberglass, cathodically protected steel or other equally non-corrosive materials approved by the Commissioner.
 - (i) It shall be the responsibility of the facility owner to demonstrate to the satisfaction of the Commissioner that the materials are non-corrosive and meet or exceed the required performance standards. listed below in this paragraph.
 - (ii) All new or replacement facilities shall be listed and constructed in accordance with the standards contained in the following:

Steel tanks - Underwriters Laboratories 58 and 1746;

Fiberglass Tanks - Underwriters Laboratories 1316;

Cathodically Protected Tanks and Piping - National Association of Corrosion Engineers RP-02-85; Underwriters Laboratories Canada S603.1 M 1982; or Steel Tank Institute (STI) Tank Standard R892-89.

Composite Tanks - Association for Composite Tanks Act-100 , UL 1746 or Steel Tank Institute (STI) Composite Tank Standard (F894-89);

Fiberglass and Non-metallic Piping - Underwriters Laboratories of Canada Guide ULC-107; or Underwriters Laboratories Subject 971;

Pipe Connectors - Underwriters Laboratories Standards 567;

Flexible Connectors - Underwriters Laboratories of Canada Standard CAN 4-S633-M84; and

Steel Piping - National Fire Protection Association Standards 30 or 31, American Petroleum Institute Publication 1632, or National Association of Corrosion Engineers Standard RP-01-69.

NOTE: Fiberglass clad steel and other steel composite tanks need not be provided with galvanic or impressed current cathodic protection if designed and constructed with secondary containment and interstitial space monitoring in accordance with standards of this subsection.

- (iii) Impressed current cathodic protection systems shall be designed by a corrosion expert and according to standards described in the National Corrosion Engineers Recommended Practice 02-85, and installed under the surveillance of a corrosion expert or by a Maine certified underground oil storage tank installer.
- (c) No used or previously installed fiberglass or cathodically protected tanks or piping may be re-installed, unless the owner has supplied the Commissioner with documentation that the manufacturer will warranty the tanks or piping against internal and external corrosion and structural failure, for a period of at least ten (10) years, after which the tank(s) or piping must be properly abandoned in accordance with the requirements of Section 11 of this rule.
- (d) All facility construction materials shall be chemically and physically compatible with the product to be stored.
- (2) Leak detection. All new and replacement facilities shall be designed to provide secondary containment for all facility components routinely containing product, including tanks, product piping and below ground ancillary equipment. New and replacement tanks and product piping shall have continuous interstitial space monitoring. Interstitial space monitoring for heating oil facilities shall be able to detect a leak from the primary containment structure of at least 0.2 gallons per hour or 150 gallons within 30 days of a leak or discharge with a 95 percent probability of detection and a five (5) percent probability of false alarm, as determined by an independent testing laboratory using U.S. Environmental

Protection Agency approved protocols. For facilities with a secondary containment within the tank or piping excavation; the secondary containment system shall be designed in accordance with Appendix O.

- (3) Overfill and spill prevention equipment. New and replacement tanks with a capacity in excess of 1,100 gallons shall prevent overfills and spills by the installation of the following spill and overfill prevention equipment.
- (a) A liquid tight spill catchment basin of a minimum capacity of three (3) gallons for each tank fill, which is sealed around the fill pipe and will collect any spillage during product delivery; and
 - (b) Overfill prevention equipment that will automatically shutoff flow into the tank when the tank is no more than 95 percent full, or alert the transfer operator when the tank is no more than 90 percent full by restricting flow into the tank or triggering a high-level audible alarm.

NOTE: The use of vent float valves is discouraged on a tank which will receive pressurized oil deliveries because of the danger of rupturing the tank.

- (4) General installation requirements for new and replacement facilities.
- (a) No underground oil storage facility or tank may be installed unless the facility has been registered in accordance with Section 4 of this rule.
 - (b) No person may install an underground oil storage facility or a portion thereof unless that person is a properly certified underground oil storage tank installer with the appropriate class of certification in accordance with Title 32 MRSA, sections 10001-10015, and has paid the required certification fee.
 - (c) No certified underground oil storage tank installer may install an underground storage tank if the installer has been placed on inactive status or if the installer's certification has been suspended or revoked pursuant to 32 MRSA, section 10015, and has not been reinstated.

NOTE: No person may connect an underground storage tank used to store heating oil to a boiler or furnace unless that person is a Master Oil Technician, or a Journeyman working under the supervision of a Master Oil Technician, licensed by the Oil and Solid Fuel Board, pursuant to Title 32 MRSA, sections 2311-2406, and rules administered by the Oil and Solid Fuel Board.

- (d) If a tank is replaced, all associated underground piping not meeting the design requirements of this rule shall be replaced. Any replacement piping shall be designed and installed in accordance with this rule. If product piping is replaced and structural damage to the associated tank has occurred, impairing its physical integrity, the associated tank shall also be replaced if not constructed of fiberglass, cathodically protected steel, or other noncorrosive materials approved by the Commissioner. Repairs of damaged fiberglass, cathodically protected steel, and other Commissioner approved

non-corrosive material tanks may only be made if conducted in accordance with Sections 5(D)(14) or (15). Tanks that can not be repaired shall be abandoned in accordance with Section 11.

- (e) All galvanic cathodic protection systems shall have an accurate structure to soil potential measurement performed in accordance with Appendix A by a cathodic protection tester upon installation.
 - (f) All phases of the installation of an impressed current cathodic protection system shall be supervised on-site by a corrosion expert. The tank, piping and other portions of the facility other than the impressed current system may be installed by a Maine certified underground oil storage tank installer without such supervision.
 - (g) No underground oil storage tank or piping shall be installed within one (1) foot of the bedrock surface.
 - (h) Leak detection and overflow/spill prevention alarms and shutoff equipment shall be installed prior to the start of the facility's operation and in accordance with manufacturer specifications, including proper calibration of electronic equipment.
 - (i) Certification of proper installation. Owners of new and replacement facilities shall ensure that the installer(s) provide(s) certification to the Commissioner within 30 days of completion of installation that the facility's materials, design and installation are in compliance with the requirements of this rule. This certification shall be provided in writing on a form provided by the Commissioner.
- (5) Installation requirements for new and replacement tanks
- (a) All tanks shall be installed in conformance with the requirements contained in Appendix D of this rule.
 - (b) All tanks shall be installed in accordance with the manufacturer's instructions.
- (6) Installation requirements for new and replacement piping.
- (a) All underground piping in contact with soil shall be installed in conformance with the requirements contained in Appendix E, except that pressurized airport aviation fuel hydrant piping shall also be installed in accordance with Section 10.
 - (b) All underground piping in contact with soil shall be constructed of fiberglass, cathodically protected steel or other non-corrosive materials which may be approved by the Commissioner.
 - (i) For #1 and #2 heating oil facilities, copper piping meeting the requirements of National Fire Protection Association Code 31, Installation of Oil Burning Equipment, may be used for supply and return lines when all connections between a steel tank and the copper piping incorporate dielectric fittings that electrically isolate the tanks from the piping, and when a continuous unbroken run of piping is utilized.

- (ii) Schedule 40 PVC (polyvinyl chloride) piping may be used for secondary containment for #2 heating oil facilities if it is at least twice the diameter of the internal piping.
- (iii) When installing copper piping inside fiberglass, PVC or other piping to provide secondary containment, supply and return lines shall be provided with spacers to separate the lines and prevent wear due to vibration and friction.

NOTE: Primary pipe spacers can be provided by using 6-inch lengths of 1/4 inch thick polyethylene foam tubing insulation placed every 10 feet of pipe.

- (iv) It shall be the responsibility of the facility owner to demonstrate to the satisfaction of the Commissioner the materials are non-corrosive.
- (v) All new or replacement non-metallic piping shall be listed by Underwriters Laboratories and installed in accordance with manufacturer instructions. Cathodically protected piping shall be constructed and installed in conformance with the National Association of Corrosion Engineers, Recommended Practices, Publication No. 02-85, or Steel Tank Institute (STI) Standard RP 892-89.

C. Operation, maintenance and testing requirements for new, replacement and existing facilities

- (1) The owner or operator shall report any evidence of a leak, as defined in Section 5(D)(9) of this rule, or other evidence of a discharge to the Commissioner within 24 hours from the time of discovery. A certified underground tank installer or remover finding evidence of a leak or oil discharge must report it to the facility owner or operator, and the Commissioner, as soon as possible, but no later than within 24 hours of discovery. Notwithstanding the above, discharges of 10 or less gallons of oil that occur above the surface of the ground, and not reaching ground water or surface waters of the State need not report to the Commissioner if the owner or operator complies with all of the following requirements:
 - (a) The discharge is cleaned up within 24 hours of discovery.
 - (b) A written log is maintained at the facility or the owner's place of business in Maine recording for each discharge the date of discovery, its source, the general location of the discharge on the facility, the date and method of cleanup, and the signature of the facility owner or operator certifying the accuracy of the log.
 - (c) The log shall be readily available for inspection by personnel and authorized agents of the Commissioner.

NOTE: To report a leak or discharge at any time 24 hours a day, seven (7) days a week call 1-800-482-0777.

- (2) If a facility has a cathodic protection system, it shall be operated, monitored and maintained in accordance with Section 5(D)(3) or (D)(4) of this rule.

- (3) For existing facilities with ground water monitoring wells for leak detection, the monitoring wells shall be sampled weekly and results recorded in a log book pursuant to Section 5(D)(12).
- (4) The owner or operator of an existing facility with leak detection equipment other than ground water monitoring wells, shall test for leaks weekly and maintain a log at the facility, including the date, the presence or absence of evidence of a leak or discharge and the name of the individual conducting the test. Automated or electronic leak detection equipment at existing facilities shall be maintained in proper operating condition at all times, and tested and calibrated at least annually in accordance with the manufacturer's instructions by a properly trained representative of the owner or operator, by a certified underground oil storage tank installer or by a representative of the manufacturer. Equipment test and calibration results shall be recorded and maintained at the facility. Repairs shall be made by a certified underground tank installer, a manufacturer trained and certified representative of the owner, or a representative of the manufacturer.
- (5) Continuous interstitial space leak detection monitoring equipment shall be maintained in proper operating condition, and shall be annually tested and calibrated, if needed, in accordance with the manufacturer's instructions by a trained representative of the owner or operator, a certified underground oil storage tank installer or an authorized representative of the manufacturer. Repairs shall be made by a certified underground tank installer, a manufacturer trained and certified representative of the owner, or a representative of the manufacturer.
- (6) The owner or operator shall maintain the spill prevention and overfill prevention equipment operating properly at all times. Automatic alarm, flow restriction and shut off equipment shall be tested annually and recalibrated, if needed, in accordance with manufacturer instructions by a manufacturer trained representative of the owner or operator, a Maine certified underground tank installer, or an authorized representative of the manufacturer. Repairs shall be made by a certified underground tank installer, a manufacturer trained and certified representative of the owner, or a representative of the manufacturer.

NOTE: Tanks and facilities with more than 42,000 gallons capacity are required to maintain a Spill Prevention Control and Countermeasure Plan (SPCC Plan) in accordance with U.S. Environmental Protection Agency regulations, 40 CFR, Part 112.

- (7) The owner or operator shall maintain a log at the facility, recording the date, results, and the individual conducting the annual tests of cathodic protection, leak detection, and overfill prevention systems. Calibration and repair records shall also be maintained in the facility log. The log shall maintain records for a period of three (3) years and be available for inspection by personnel and authorized agents of the Commissioner.
- (8) No bare or asphalt coated steel tank or piping may be structurally repaired for use as part of an underground oil storage facility.
- (9) Tanks may only be relined in accordance with the requirements contained in Section 5(D)(14). Repairs to tanks and piping other than relining shall be done in accordance with Section 5(D)(15) of this rule.

- (10) No oil product shall be stored in a facility of a design or construction with which it is not chemically or physically compatible.

D. Facility closure and abandonment. The closure, abandonment, or temporary discontinuance of service of a facility or any part thereof shall be conducted in accordance with the requirements of Section 11 of this rule.

7. Regulation of Facilities for the Underground Storage of Waste Oil

A. Applicability

- (1) These rules shall apply to any person other than a waste oil dealer who stores or proposes to store waste oil in underground tanks.
- (2) Waste oil dealers are subject to the rules set forth in Chapter 860 of the Department's Regulations (Waste Oil Management Rules).

B. Design and installation standards for new and replacement facilities

- (1) All tanks and associated piping used for the underground storage of waste oil shall be registered in accordance with Section 4 of this rule.
- (2) The installation of new and replacement tanks constructed of bare steel or asphalt coated steel is prohibited.
- (3) All new and replacement tanks shall be installed by a Class 1 or 2 underground oil storage tank installer who has been properly certified pursuant to 32 MRSA, sections 10001-10015.
- (4) New and replacement waste oil tanks and associated piping shall be equipped with secondary containment with continuous interstitial space monitoring, designed and installed in accordance with Section 5 (B).
- (5) Piping for a new and replacement waste oil facility supplying a waste oil furnace or boiler may not use PVC piping for secondary containment but instead shall be constructed of fiberglass, cathodically protected steel or other non corrosive materials approved by the Commissioner.
- (6) Fill and removal pipes at new and replacement facilities shall be installed with an overfill collection box with a capacity of at least three (3) gallons with a liquid tight seal around the fill pipe that will collect spillage during product delivery.
- (7) New and replacement underground waste oil tanks shall not be located in the following areas;
- (a) Beneath a building or other permanent structure;

- (b) Within 100 feet of an existing public or private drinking water supply, except where the only water supply within 100 feet is owned, operated or utilized solely by the owner or operator of the tank; or
 - (c) Within 25 feet of a classified body of surface water.
- (8) No used or previously installed fiberglass or cathodically protected steel tank or piping may be re-installed unless the owner has provided the Commissioner with satisfactory documentation that the manufacturer will warrant the tank or piping against internal and external corrosion and structural failure for a period of at least ten (10) years, after which the tank or piping must be properly abandoned in accordance with the requirements of Section 11 of this rule. Re-installation of a tank or piping shall require an amendment of the facility registration in accordance with Section 4(N) of this rule.
- (9) Certification of proper installation. Owners of new and replacement facilities shall ensure that the installer(s) provides certification to the Commissioner within 30 days of completion of installation; that the facility's materials, design and installation are in compliance with the requirements of this rule. This certification shall be provided in writing on a form provided by the Commissioner.

C. Operation, maintenance, testing and reporting requirements for existing, new and replacement facilities

- (1) All cathodically protected steel tanks, piping and other ancillary equipment shall be operated, and maintained in accordance with Section 5 (D) (3) or (D)(4), and Appendix A of this rule.
- (2) Continuous interstitial space leak detection monitoring equipment shall be maintained in proper operating condition and annually tested and if necessary calibrated, in accordance with the manufacturer's instructions by a trained representative of the facility owner or operator, a certified underground tank installer or an authorized representative of the manufacturer.
- (3) Ground water monitoring wells installed for leak detection and associated with existing underground waste oil tanks shall be sampled weekly in accordance with the requirements of Section 5 (D) (12). The samples shall be inspected for visual and olfactory evidence of waste oil.
- (4) The owner or operator shall report promptly upon discovery to the Commissioner, any evidence of a leak, as defined in Section 5 (D) (9) of this rule, or discharge of oil. Under no circumstances shall the report be received later than 24 hours from the time of discovery of the leak or discharge. A certified underground tank installer or remover finding evidence of a leak or oil discharge must report it to the facility owner or operator, and the Commissioner, as soon as possible, but no later than within 24 hours of discovery. Notwithstanding the above, discharges of 10 or less gallons of oil that occur above the surface of the ground, and not reaching ground water or surface waters of the State need not report to the Commissioner if the owner or operator complies with all of the following requirements:
 - (a) The discharge is cleaned up within 24 hours of discovery.

- (b) A written log is maintained at the facility or the owner's place of business in Maine recording for each discharge the date of discovery, its source, the general location of the discharge on the facility, the date and method of cleanup, and the signature of the facility owner or operator certifying the accuracy of the log.
- (c) The log shall be readily available for inspection by personnel and authorized agents of the Commissioner.

NOTE: To report a leak or discharge at any time, 24 hours a day, seven (7) days a week, call 1-800-482-0777.

- (5) The owner or operator shall maintain a log at the facility, recording the date, results, and the individual conducting the annual tests of cathodic protection and leak detection systems. Such records shall be maintained for a period of three (3) years and be available for inspection by personnel and authorized agents of the Commissioner and municipal officials.
- (6) Only waste oil tanks constructed of cathodically protected steel, fiberglass or another non-corrosive material approved by the Commissioner may be relined. Such tanks must be relined in accordance with the requirements contained in Section 5(D)(14). Repairs other than relining shall be conducted in accordance with Section 5(D)(15) of this rule.
- (7) No waste oil shall be stored in a facility of a design and construction with which it is not chemically or physically compatible.
- (8) Hazardous substances as defined in Title 38 MRSA, subsection 1362, shall not be added to or stored at a waste oil facility.

NOTE: The addition of degreasers, solvents and other hazardous substances to a waste oil tank may make the waste oil a hazardous waste. Hazardous wastes must be stored, manifested, transported and disposed in accordance with the Department's hazardous waste regulations (Chapters 850 through 857).

- (9) All owners or operators of waste oil facilities shall provide financial responsibility coverage in accordance with the requirements of Section 5(D)(16) of this rule.

D. Closure of underground waste oil storage facilities

- (1) Underground waste oil storage tanks and associated piping shall be abandoned in accordance with the requirements of Section 11 of this rule.

(8) Regulation of Field Constructed Underground Oil Storage Tanks

A. Applicability

- (1) This section of the rules shall apply to all underground oil storage tanks where the primary containment structure is constructed at the location of installation and is not delivered to the installation site without further assembly required.

- (2) This section applies to tanks constructed of steel, concrete, fiberglass reinforced plastic, fiberglass, and other materials.

B. Design and installation requirements for new and replacement field constructed tanks

(1) General design requirements

- (a) Bare steel and asphalt coated steel tanks are prohibited.
 - (b) Concrete, fiberglass reinforced plastic, fiberglass and riveted steel tanks are prohibited.
 - (c) All new and replacement steel tanks shall be cathodically protected and coated with a suitable dielectric material. The cathodic protection system shall be designed by a corrosion expert to adequately protect all parts of a tank from corrosion by maintaining a negative structure to soil potential of at least 0.85 volts. Cathodic protection systems shall be designed in accordance with National Association of Corrosion Engineers Standard RP-02-85, "Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems".
 - (d) New and replacement steel tanks shall be designed by a professional engineer in compliance with Maine's professional regulation statute, and constructed in accordance with Underwriters Laboratories Standard 1746, "Corrosion Protection Systems for Underground Storage Tanks", and American Petroleum Institute Standard 650 "Welded Steel Tanks for Oil Storage".
 - (e) Piping connected to field constructed tanks shall be designed and constructed in accordance with the requirements of either Sections 5, 6, 7, 9 or 10 depending on type of facility and piping system proposed.
- (2) Leak detection. All new and replacement field constructed tanks shall be provided with secondary containment and continuous interstitial space monitoring. Secondary containment utilizing an excavation liner shall be designed and installed in accordance with Appendix O.
- (3) Overfill and spill prevention equipment. New and replacement tanks shall prevent overfills and spills by the installation of overfill and spill prevention equipment in accordance with Section 5 (B) (3) or Section 6(B)(3) depending on facility type.

NOTE: Tanks and facilities with more than 42,000 gallons capacity are required to maintain a Spill Prevention Control and Countermeasure Plan (SPCC Plan) in accordance with U.S. Environmental Protection Agency regulations, 40 CFR, Part 112.

(4) General installation requirements

- (a) No new or replacement field constructed underground oil storage tank may be installed unless the facility has been registered in accordance with Section 4 of this rule.
- (b) New and replacement field constructed tanks shall be assembled and installed according to good engineering practices under the surveillance of a professional engineer registered

in Maine or otherwise working in compliance with Title 32 MRSA, section 1351, et seq. The engineer shall be responsible for supervising all phases of assembly and installation. Design and installation plans shall be submitted for the Commissioner's review and approval at least 60 days prior to tank registration and shall include, at a minimum:

- (i) Secondary containment and leak detection installation details;
 - (ii) Overfill and spill prevention equipment installation;
 - (iii) Anchoring;
 - (iv) Excavation and backfill specifications; and
 - (v) Cathodic protection system installation.
- (c) Installation of the cathodic protection system shall be supervised by a corrosion expert.
- (d) If a tank is replaced, all associated piping not meeting the design and installation requirements of this section shall be replaced except if the piping is part of an airport hydrant piping system. If product piping attached to a field constructed tank is replaced and structural damage to the associated tank has occurred, the tank shall also be replaced if not designed and installed in accordance with this section.
- (e) Certification of proper installation. Owners of new and replacement facilities shall ensure that the project engineer provides certification to the Commissioner within 30 days of completion of installation; that the facility's materials, design and installation are in compliance with the requirements of this rule. This certification shall be provided in writing on a form provided by the Commissioner.

C. Retrofitting requirements for existing motor fuel, marketing or distribution field constructed tanks

- (1) Leak detection shall be retrofitted at existing field constructed tanks in accordance with section 5 of this rule.
- (2) Overfill and spill prevention equipment shall be retrofitted by December 1, 1993 at all existing field constructed tanks made of fiberglass, cathodically protected steel, or other non-corrosive materials approved by the Commissioner, in accordance with section 5(B)(3) of this rule.

D. Operation, maintenance and testing requirements for new, replacement and existing tanks

- (1) Tanks that are part of a motor fuel, marketing or distribution facility shall operate in accordance with the requirements of section 5(D) of this rule, except for 5(D)(1) and (2).
- (2) Tanks that are part of a heating oil facility for consumptive use by the owner or operator shall operate in accordance with the requirements of section 6(C) of this rule.

- (3) Tanks that are a part of a waste oil facility shall operate in accordance with the requirements of section 7(C) of this rule.
- (4) Notwithstanding the above, repairs shall be conducted in accordance with sections 5(D)(14) and (15), except that a repair may be designed by and conducted under the surveillance of a professional engineer in accordance with Maine's professional regulation statutes.

E. Closure and abandonment of underground field constructed oil storage tanks

- (1) Tanks shall be abandoned in accordance with the requirements of section 11 of this rule, except that owners of concrete tanks larger than 20,000 gallons capacity may be granted a variance by the Commissioner from the requirement under the following conditions:
 - (a) An alternate method of closure or long term maintenance is proposed that is equally protective of the environment, public health, safety and welfare.
 - (b) Discharges of oil will be remediated to the satisfaction of the Commissioner;
 - (c) Public access is controlled;
 - (d) A notice of the presence of underground oil storage tanks is permanently attached to the deed of the parcel upon which the tanks are located, including at a minimum, a description of the tanks, their size, types of product stored, and their surveyed location; and
 - (e) Written notice has been provided to the local fire department having jurisdiction indicating that a variance from the Commissioner is being sought from the requirements of Section 11.

The Commissioner may approve, deny, or approve with conditions a variance under this paragraph.

- (2) The owner or operator of a field constructed tank shall conduct a site assessment in accordance with the requirements of Section 11 (A) and Appendix P prior to the completion of facility closure.

9. Regulation of Facilities for the Underground Storage of Heavy Oils

A. Applicability

- (1) This section applies to all underground oil storage facilities intended for storing or containing heavy oil, oil which requires to be heated during storage, including #5 and #6 oil, and as defined in Section 3(X) of this rule.
- (2) This section applies to No. 4 oil storage facilities only when it must be heated during storage.

B. Design and installation requirements for new and replacement facilities

(1) General design requirements

- (a) Heavy oil facilities must follow the general design requirements of heating oil facilities found in Section 6(B)(1) or Section 8(B) where proposing a field constructed tank of this rule.
 - (b) All facility construction materials must be physically and chemically compatible with the product to be stored, including the temperature at which the product is to be stored. Fiberglass components shall not be installed in facilities where the oil temperature will exceed 150°F.
- (2) Leak detection. New and replacement heavy oil facilities must provide leak detection in conformance with the leak detection requirements for other heating oils in section 6(B)(2) or field constructed tanks in section 8(B)(2), including secondary containment with continuous interstitial space monitoring.
- (3) Overfill and spill prevention equipment requirements shall be the same as those for other heating oils contained in section 6(B)(3) of this rule.
- (4) Installation requirements for new and replacement heavy oil facilities.
- (a) No underground oil storage facility or tank may be installed unless the facility has been registered in accordance with section 4 of this rule.
 - (b) No person may install an underground heavy oil storage facility unless that person is a properly certified Class 1 underground oil storage tank installer in accordance with Title 32 MRSA, sections 10001-10015, and has paid the certification fee.
 - (c) No certified underground oil storage tank installer may install an underground oil storage tank if the installer has been placed on inactive status or if the installer's certification has been suspended or revoked pursuant to 32 MRSA, section 10015;
 - (d) If a tank is replaced, all associated underground piping not meeting the design requirements of this rule shall be replaced. Any replacement shall be designed and installed in accordance with this rule. If product piping is replaced and structural damage to the tank has occurred, the associated tank shall also be replaced if not constructed of fiberglass, cathodically protected steel, or other non-corrosive materials approved by the Commissioner. Repairs of damaged fiberglass, cathodically protected steel, and other Commissioner approved tanks may only be made if conducted in accordance with sections 5(D)(14) or (15). Tanks that can not be repaired shall be abandoned in accordance with section 11.
 - (e) New and replacement heavy oil facilities shall be installed in accordance with National Fire Protection Association Code 31 and the requirements of section 6(B)(4),(5) and (6) of this rule, except that the installation of copper and PVC piping is prohibited and the heating system must be electrically isolated from the cathodic protection system if a steel tank.

- (f) New and replacement fiberglass tanks shall be provided with continuous product temperature monitoring equipment, installed in accordance with the manufacturer's specifications.

C. Operation, maintenance and testing requirements for new, replacement and existing heavy oil facilities

- (1) Heavy oil facilities shall operate in accordance with the requirements for other heating oil facilities in section 6(C) of this rule.
- (2) The owner or operator of heavy oil facilities with fiberglass tanks or piping shall monitor representative product temperature within the tank daily to ensure it does not exceed tank and piping manufacturer's specifications or limits. Product temperature readings shall be recorded, including date, temperature, and the initials of the person taking the measurements or readings. Temperature records shall be maintained at the facility for a period of three (3) years and available to Department personnel and representatives or municipal officials.
- (3) Product temperature measurement equipment shall be maintained in good operating condition. Such equipment shall be tested and if necessary, calibrated, at least annually by a properly trained representative of the owner or operator, a Class I certified installer or an authorized representative of the manufacturer.

D. Closure requirement. Heavy oil tanks must comply with the requirements of section 11 of this rule.

10. Regulation of Pressurized Airport Aviation Fuel Hydrant Piping Systems

A. Applicability

- (1) This section of the rules shall apply to all underground pressurized airport aviation fuel hydrant piping systems, including associated pressurized transmission piping, that are a part of an underground oil storage facility.
- (2) Underground tanks storing aviation fuel shall comply with section 5 or 8 of these rules, as applicable.

B. Design, construction and installation requirements for new and replacement pressurized airport hydrant piping systems

- (1) General design and construction requirements
 - (a) Bare steel and asphalt coated steel piping are prohibited.
 - (b) All new and replacement steel piping in contact with soil shall be cathodically protected and coated with a suitable dielectric material. The cathodic protection system shall be designed by a corrosion expert to adequately protect all parts of the piping system from corrosion by maintaining a negative structure to soil potential of at least 0.85 volts. Cathodic protection systems shall be designed in accordance with National Association

of Corrosion Engineers Standard RP-02-85, "Control of External Corrosion on Metallic Buried or Partially Buried, or Submerged Liquid Storage Systems".

- (c) All new and replacement steel piping shall be constructed of carbon steel pipe with 3/8-inch wall thickness for pipe 12 inches or larger in diameter, or of schedule 10 or 20 stainless steel.
 - (d) Piping shall be designed by a professional engineer in compliance with Maine's professional regulation statutes, and constructed in accordance with American National Standards Institute (ANSI) standard for "Chemical Plant and Petroleum Refinery Piping", ANSI/ASME B 31.3.
- (2) Leak detection. All new and replacement airport hydrant piping routinely containing oil shall be provided with secondary containment and continuous interstitial space monitoring. Secondary containment utilizing an excavation liner shall be designed and installed in accordance with Appendix O.

NOTE: Facilities with more than 42,000 gallons capacity are required to maintain a Spill Prevention, Control, and Countermeasure (SPCC) Plan in accordance with U.S. Environmental Protection Agency regulations, 40 CFR, Part 12.

(3) General installation requirements

- (a) No new or replacement airport hydrant piping may be installed unless the facility and piping have been registered in accordance with Section 4 of this rule.
- (b) New and replacement airport hydrant piping shall be installed according to good engineering practices with seamless pipe, using welded joints and under the supervision of a professional engineer registered in Maine or otherwise working in compliance with Title 32 MRSA, section 1351, et seq. The engineer shall be responsible for surveillance of all phases of installation. Installation plans shall be submitted for Department review and approval at least 60 days prior to new or replacement piping registration and shall include at a minimum:
 - (i) Secondary containment and leak detection installation details;
 - (ii) Excavation and backfill specifications;
 - (iii) Pipe material specifications;
 - (iv) Welding specifications; and
 - (v) Cathodic protection system installation.
- (c) Installation of the cathodic protection system shall be supervised by a corrosion expert.
- (d) If airport hydrant piping is replaced, any underground oil storage tank(s) not constructed of fiberglass, cathodically protected steel, or other Commissioner approved non-corrosive

materials in conformance with sections 5 or 8 of this rule shall be replaced at the same time.

- (e) New and replacement piping shall be installed in accordance with ANSI B31.3.
- (f) Welded joints shall be radiograph inspected.
- (g) Hydrant pits shall be liquid tight and shall drain to an oil water separator, or other Commissioner approved collection and treatment system.
- (h) Certification of proper installation. Owners of new and replacement facilities shall ensure that the project engineer provides certification to the Commissioner within 30 days of completion of installation that the facility's materials, design and installation are in compliance with the requirements of this rule. This certification shall be provided in writing on a form provided by the Commissioner.

C. Retrofitting requirements for existing airport hydrant piping systems

- (1) Existing airport hydrant piping systems without secondary containment and interstitial space monitoring or another form of leak detection in compliance with section 5 (B)(2) of this rule, shall retrofit or implement one of the following leak detection methods by December 1, 1991:
 - (a) An annual hydrostatic test of the entire piping line conducted at 150 percent of maximum design operating pressure, or maximum transient surge pressure, whichever is greater. Test shall be conducted for a minimum of four (4) hours and otherwise in accordance with API Recommended Practice 1110, "Pressure Testing of Liquid Petroleum Pipelines".
 - (b) Continuous vapor or tracer monitoring in the unsaturated soil zone, using sufficient sampling points to detect a leak or discharge of oil from any point in the piping. Vapor monitoring shall meet the requirements specified in section 5(B)(2)(c) of this rule.
 - (c) Other leak detection systems approved by the Commissioner that can reliably detect a loss of at least 40 gallons per day.
- (2) Existing airport hydrant piping systems constructed of steel may retrofit corrosion protection in accordance with Title 38 MRSA, section 563-A(1-A) as an alternative to abandonment or replacement, provided a corrosion induced leak has not occurred and the system is not located in a sensitive geological area. To be eligible for this exemption, the facility owner or operator must demonstrate to the Commissioner's satisfaction that the airport hydrant piping system does not leak 40 gallons or more per day and that any leaks are not directly or indirectly due to corrosion. Cathodic protection shall be designed by a corrosion expert and installed in accordance with the standards of Section 10 (B) above. Leak detection shall be retrofitted at the same time cathodic protection is retrofitted.

D. Operation maintenance, and testing requirements for new, replacement and existing hydrant piping systems

- (1) Airport aviation fuel hydrant piping systems shall operate in accordance with the requirements of section 5(D) of this rule, except 5(D)(1) and (2); and
 - (2) Repairs of new, replacement, and existing piping shall be done in accordance with good engineering practice and under the surveillance of a Maine professional engineer. Upon completion, the repaired section shall be tested for leaks and for proper operation of the cathodic protection system. A report describing the repairs made and test results shall be submitted by the owner or operator to the Commissioner for his approval.
- E. Closure and abandonment of airport hydrant piping systems shall be in accordance with Section 11 of this rule.

11. Regulations for Proper Closure of Underground Oil Storage Facilities

A. Facility closure requirements

- (1) The owner or operator of an underground oil storage facility or tank that has been or is intended to be out-of-service for a period of more than 12 months shall be closed in accordance with the requirements of this section. Satisfactory closure shall include:
 - (a) Proper abandonment of tanks, piping, and other facility components;
 - (b) Emptying and cleaning tanks of all liquids and accumulated sludges;
 - (c) Storage or disposal of removed tanks in accordance with this section;
 - (d) For motor fuel, marketing and distribution facilities, waste oil facilities, field constructed tanks, heavy oil facilities and airport hydrant piping; completion of a site assessment in accordance with the requirements of Appendix P; and
 - (e) Clean-up of discharges and leaks to the satisfaction of the Commissioner in accordance with section 12 of this rule.
- (2) When ownership of the facility or tank is unknown, the current landowner shall be responsible for facility closure.

NOTE: Maine statute (38 MRSA, subsection 563-A) requires the closure of non-conforming tanks in accordance with this rule. Compliance dates vary based on tank age and location. Consult the statute or contact the Bureau of Hazardous Materials & Solid Waste Control to determine the applicable deadline.

B. Temporarily out of service facilities and tanks

- (1) All underground oil storage tanks, piping and ancillary equipment that have been, or are intended to be, taken out of service for a period of more than twelve (12) months shall be properly abandoned unless the tank owner has received written permission from the Commissioner to remain temporarily out of service in accordance with the requirements of this subsection.

- (2) When a facility has been or is intended to be temporarily out of service for a period to exceed three (3) months and not to exceed 12 months, the owner or operator shall:
 - (a) Continue operation and maintenance of the corrosion protection system in accordance with the applicable requirements of this rule;
 - (b) Continue leak detection in accordance with the applicable requirements of this rule, unless all product is emptied from the tank with no more than one (1) inch of residual left;
 - (c) Leave vent lines open and functioning; and
 - (d) Cap and secure all other lines, pumps, manways and ancillary equipment.
 - (e) Evidence of a leak or discharge shall be reported, investigated and, if confirmed, remediated in accordance with Section 12 of this rule.
- (3) A tank owner may apply in writing for approval to allow a facility to remain temporarily out of service for more than 12 months. Written approval may only be granted by the Commissioner for a period of time not to exceed an additional 12 months when:
 - (a) The owner can provide documentation that the facility is not leaking;
 - (b) The requirements of paragraph (2) above have been met;
 - (c) The facility shall be precision tested prior to returning to service; and
 - (d) The facility is constructed of fiberglass, cathodically protected steel, or another equally non-corrosive material approved by the Commissioner.

C. Abandonment by removal

- (1) Tanks or facilities which have been out of service for twelve (12) months must be removed within sixty (60) days unless a written request has been made and has not been acted upon or unless written permission has been granted by the Commissioner pursuant to section 11(B).
- (2) Removal of tanks and facilities shall be conducted in sequence in accordance with the requirements contained in Appendix J to the satisfaction of the Commissioner. For facilities listed in section 11(A)(1)(d), a site assessment shall be conducted at the time of removal in accordance with Appendix P of this rule.
- (3) As required by Title 38 MRSA, subsection 566-A(5) removals of Class 1 liquid tanks or facilities as of September 28, 1991 must be conducted under the direct, on-site supervision of an underground oil storage tank installer or remover certified pursuant to Title 32, sections 10001 et seq., or of fire-fighting personnel certified by the Commissioner.

NOTE: The above requirement applies to gasoline facilities and possibly other liquid petroleum products such as aviation fuel.

NOTE: Fire prevention requirements of these rules can also be enforced by State and local fire officials.

- (4) If underground oil storage tanks which have been removed are stored, the following provisions shall apply:
- (a) Areas chosen for storage shall not be accessible to the general public.
 - (b) Inerted tanks may be stored with unplugged openings. While being transported, openings are to be tightly plugged, screwed plugs shall be used and one plug shall have an 1/8 inch vent hole to prevent the tank from being subjected to an excessive pressure differential caused by extreme temperature changes.
 - (c) All stored underground oil storage tanks shall be labeled with the information noted in section 11(C)(45)(c).
 - (d) Any scale or sludge released by the tank prior to and during storage shall be disposed of in accordance with Chapter 851 of the Maine Hazardous Waste Management Rules.
- (5) If underground oil storage tanks which have been removed are sold or reused, the following provisions shall apply:
- (a) Bare steel and asphalt coated steel tanks shall not be re-installed for use as an underground oil storage facility;
 - (b) Fiberglass and cathodically protected tanks or piping may be re-installed, provided that the tank owner has supplied the Commissioner with satisfactory documentation that the manufacturer will warranty the facility for a period of at least ten (10) years for internal and external corrosion and structural failure, after which the tanks or piping shall be properly abandoned pursuant to this section. A written statement attesting to the validity of the warranty, signed by the tank manufacturer, and provided to the Commissioner constitutes the only proof of warranty coverage.
 - (c) All transactions shall be accompanied by a bill of sale indicating the former use of the tank. The bill of sale shall contain the following warning:

Tank Has Contained Leaded Gasoline or Flammable Liquid (use applicable designation)
Not Gas-Free
Not Suitable for Food or Drinking Water
 - (d) The tank shall be clearly marked with the notice stated in subparagraph c above, in legible letters not less than one (1) inch high, regardless of the condition of the tank.
 - (e) Abandoned underground oil storage tanks are prohibited from use for above ground storage of oil.

D. Abandonment by filling in place

- (1) Abandoned facilities and tanks shall be removed, except where the owner can demonstrate to the Commissioner that removal is not physically possible or practicable because the tank or other component of the facility to be removed is either:
 - (a) Located beneath a building or other permanent structure which cannot be practically replaced;
 - (b) Of a size and type of construction that it cannot be removed;
 - (c) Inaccessible to heavy equipment necessary for removal; or
 - (d) Positioned in such a manner that removal would endanger the structural integrity of nearby tanks.
- (2) A facility or tank owner may apply to the Commissioner for a variance to abandon a facility or tank in place rather than abandon the tank or facility by removal. The Commissioner may grant such a variance request if it finds that:
 - (a) Abandonment by removal is not possible or practicable due to circumstances other than those listed in paragraph 1 above; and
 - (b) The granting of a variance shall not pose a threat to a private or public drinking water supply or the quality of ground water, and is consistent with the intent of this rule.
- (3) All facilities to be abandoned in place shall do so by following the procedures outlined in Appendix K in sequence. For facilities listed in section 11(A)(1)(d), a site assessment shall be conducted at the time of abandonment in accordance with Appendix P of this rule.

E. Notification requirements

- (1) The owner or operator of a facility or tank which is to be closed or abandoned shall notify the Commissioner and the local fire department having jurisdiction. This notice shall be in writing and received by the Commissioner at least (30) days prior to abandonment, except that when ownership of the facility or tank is unknown, the current property owner shall be responsible for compliance with the requirements of this section. This notice shall include:
 - (a) The name, mailing address, and telephone number of the owner;
 - (b) The mailing address and location of the facility;
 - (c) The size(s) of tank(s) to be abandoned or taken out of service;
 - (d) The type(s) of product(s) most recently stored in each tank;
 - (e) The registration number of the facility and tank(s) if registered under this rule;

- (f) If the tank has contained a Class I liquid, the inerting procedure and, if applicable, the cleaning location;
 - (g) If abandonment in place is planned, the criteria used for justifying abandonment in place, as listed in section 11 (D)(1), above;
 - (h) The approximate age of the tank, if known; and
 - (i) The date upon which the facility or tank is to be removed or when a variance has been granted pursuant to section 11(C) of this rule, the date on which the tank or facility will be properly abandoned on site.
- (2) The tank owner shall keep a permanent record of the tank location, the date of abandonment, and the method of conditioning the tank for abandonment.
- (3) The tank owner shall be responsible for attaching to the deed of the property on which the tank is located a notice that an underground oil storage tank which has been abandoned in place pursuant to section 11(C). The deed notation shall be executed within 30 days of completion of the abandonment.

12. Discharge and Leak Investigation, Response and Corrective Action Requirements

A. General requirements

- (1) In accordance with Title 38 MRSA, section 568, any facility owner or operator or other responsible party, as defined in 38 MRSA, section 562-A(17), where a leak, spill or other prohibited discharge of oil occurs shall immediately undertake to remove that discharge to the satisfaction of the Commissioner, and in accordance with the requirements of this section. In determining the extent of a corrective action, the Commissioner and his staff shall consider the potential for human exposure and for adverse effects on public safety, health and welfare as well as the environment.
- (2) Any evidence of a possible leak or discharge of oil as defined in section 5(D)(9) of this rule, any spill or overfill, or any other discharge of oil shall be reported to the Commissioner within 24 hours of discovery. Notwithstanding the above, discharges of 10 or less gallons of oil that occur above the surface of the ground, and not reaching ground water or surface waters of the State, need not be reported to the Commissioner if the owner or operator complies with all of the following requirements:
- (a) The discharge is cleaned up within 24 hours of discovery.
 - (b) A written log is maintained at the facility or the owner's place of business in Maine recording for each discharge, the date of discovery, its source, the general location of the discharge at the facility, the date and method of cleanup, and the signature of the facility owner or operator certifying the accuracy of the log.
 - (c) The log shall be readily available for inspection by personnel and authorized agents of the Commissioner.

NOTE: Discharges of oil may be reported by calling the Department's toll free telephone number, 1-800-482-0777.

- (3) Any person who causes, or is responsible for, a discharge to ground water in violation of 38 MRSA, section 543, is not subject to any fines or penalties for a violation of subsection 543 for the discharge if that person promptly reports and removes that discharge in accordance with this rule as well as other rules or orders of the Commissioner and the Board.
- (4) All corrective action plans required under this Section shall be certified by a Maine certified geologist, a registered Maine professional engineer, or a geologist or engineer otherwise in compliance with the Maine professional regulation statutes for geologists or engineers. Geological and hydrogeological interpretations shall be certified by a geologist. Contaminated soil and ground water treatment system design plans shall be stamped by an engineer. Implementation of corrective actions shall be supervised by a Maine certified geologist, a Maine registered professional engineer, or an engineer or geologist otherwise working in compliance with Maine's professional regulation statutes. Individuals providing the above professional services should be knowledgeable in underground oil storage facility investigation and remediation.

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- (5) Leaks and discharges of oil shall be investigated and corrected using techniques that are cost-effective, reliable and technically feasible.

B. Leak investigation and confirmation requirements

- (1) The facility owner or operator, or other responsible party shall immediately investigate and confirm all suspected leaks, spills or other discharges of oil to the Commissioner's satisfaction within 14 days of discovery, or another reasonable time period approved by the Commissioner, using the following steps or another procedure approved by the Commissioner:
 - (a) Leak detection check. If the facility has leak detection in accordance with this rule, a check of the leak detection system may be conducted prior to precision testing. All components of the leak detection system for tanks and piping shall be checked for proper operation, recalibrated if an automated or electronic system, and monitored in accordance with the requirements of this rule and if applicable, the manufacturer's instructions. Monitoring shall be conducted for five (5) consecutive days. For manual leak detection systems, monitoring shall be conducted daily. Records of the findings of the leak detection check and monitoring shall be provided to the Commissioner. If leak detection monitoring results are conclusive and do not indicate a leak, further investigation is not needed, unless there is other environmental contamination or physical evidence indicating a leak or discharge of oil. If the leak detection results indicate a leak, are inconclusive or the facility does not have leak detection meeting the requirements of this rule, the owner, operator or other responsible party shall conduct a precision test of the facility in accordance with subparagraph b. If leak detection indicates a leak the owner, operator or other responsible party shall abandon, repair or replace facility components in

accordance with appropriate sections of this rule. In addition the owner or operator of a motor fuel, marketing or distribution facility shall also comply with the testing and replacement procedures outlined below in paragraph d of this Section.

NOTE: Redoing a facility's statistical inventory analysis is not an acceptable option under the leak detection check requirements because of the delay to collect the 30 to 60 days of daily product inventory data required by this method.

- (b) Precision test. The owner, operator or other responsible party shall conduct a precision test of the facility that determines whether and where a leak exists. A copy of all precision test results shall be submitted to the Commissioner by the facility owner and the tester.
 - (i) If a precision test indicates a leak the owner, operator or other responsible party shall abandon, repair or replace facility components in accordance with appropriate sections of this rule and initiate a site assessment and corrective actions as specified in this section. In addition the owner or operator of a motor fuel, marketing or distribution facility shall also comply with the replacement procedures outlined below in subparagraph c.
 - (ii) If results from a Commissioner approved and properly conducted precision test of the facility does not indicate a leak exists and if no environmental contamination or other physical evidence is the basis for suspecting a leak or discharge, further investigation is not required. The Commissioner may require additional precision testing or an investigation in accordance with section 12(B)(1)(c) for environmental contamination by oil if initial precision tests are inconclusive or improperly conducted.
 - (iii) The facility owner, operator or other responsible party shall conduct a site assessment as described below in subparagraph c if precision test results do not indicate a leak exists but evidence of environmental contamination or other physical evidence is the basis for suspecting a leak.
- (c) Site assessment
 - (i) The objectives of the site assessment are as follows:
 - (a) Determine the presence or absence of a leak or oil discharge where contamination is most likely to be present on the facility site;
 - (b) Identify the presence and the extent of free product and soils contaminated above the notification levels in Appendix P of this rule;
 - (c) Determine the degree of a threat to ground water quality; and
 - (d) Consider the nature of the oils stored at a facility, the cause for suspecting a leak or discharge, the type of backfill and soils, the depth of ground water, the depth of bedrock, and other factors appropriate for identifying the presence and source of a leak or other discharge.

- (ii) The site assessment shall be conducted in accordance with procedures outlined in Appendix P of this rule, except that paragraph 8 of that appendix shall not apply. To verify the presence or absence of a leak or oil discharge at an operating facility in follow-up to the requirements of sections 12(B)(1)(b)(ii) or (iii) above, in situ hydrogeological investigation procedures outlined in paragraph 7 of Appendix P shall be followed.
 - (iii) If site assessment results for the excavation zone and other areas of the facility site indicate that a leak, spill or other discharge of oil has occurred, the owner or operator shall begin corrective actions in accordance with subsection C below.
 - (iv) If the site assessment results for the excavation zone and other areas of the facility site do not indicate a leak, spill or other discharge of oil has occurred, further investigation is not required.
- (d) If replacement or removal is required as a result of a corrosion-induced leak in an unprotected steel tank, the owner or operator of the facility may either replace all other tanks and piping at that facility not meeting the design and installation standards set forth in section 5(B) of this rule or comply with all of the following:
- (i) Remove all bare steel and asphalt-coated steel tanks at the facility that are more than 20 years old. For the purposes of this subsection, where the age of a tank cannot be reasonably determined, all tanks will be assumed to be 20 years old as of May 1, 1986.
 - (ii) Perform a statistical inventory analysis of the entire facility and submit the results of that analysis to the Commissioner, in accordance with the requirements of section 5(D)(2). If a statistical inventory analysis of the entire facility has been performed within 60 days prior to the required removal, then the results of that analysis may be submitted to the Commissioner instead. If the results of the statistical inventory analysis for any portion of the facility indicates evidence of a leak or that the data are not sufficiently reliable to make a determination that the facility is or is not leaking according to the requirements of section 5(D)(2)(C), the Commissioner may require that all remaining tanks and piping at the facility be precision tested, unless it can be demonstrated that the same tanks and piping passed a precision test meeting Department specifications within the previous six (6) months; and
 - (iii) Results of all precision tests conducted pursuant to (ii) above, shall be submitted to the Commissioner by the facility owner and the tester, and all tanks and piping found to be leaking shall be removed pursuant to section 11 of this rule.
- (e) Within 28 days of discovery of evidence of a leak or another time period approved by the Commissioner, the owner, operator or other responsible party shall submit a report on the steps taken and the findings of leak investigation and confirmation efforts. The report will include the name, address, and telephone number of the person to contact for more information. This report shall include a site assessment report meeting the requirements of Appendix P except that the reporting deadline shall be as specified above in this subparagraph.

C. Minimum corrective action requirements**(1) Initial response and abatement measures**

- (a) Identify and mitigate fire, explosion and vapor hazards to the satisfaction of the Commissioner and the local public safety agency having jurisdiction within 24 hours of discovery of a leak or discharge or another time period approved by the Commissioner.
- (b) Take immediate action to prevent any further discharge of oil from the facility to the environment within 24 hours of discovery of leak or discharge, or another time period approved by the Commissioner. This shall include ceasing use and removing from those tanks and associated piping suspected or tested to be leaking as much oil as necessary to entirely stop the discharge. All tanks and piping shall be abandoned in accordance with section 11.
- (c) Remove the tanks and associated piping as soon as possible in accordance with section 11 of this rule except that compliance with the waiting period between notification and abandonment is hereby waived.
- (d) Prevent further migration of oil into surrounding soils and ground water and surface water, including the removal of any free product in the vicinity of the tanks and piping or other source of leak or discharge. Recovery of free product shall be initiated immediately upon discovery and followed by submission of a free product abatement plan, meeting the requirements of paragraph 2 of this subsection, minimum corrective actions.
- (e) Continue to monitor and mitigate any additional fire and safety hazards posed by vapors or free product that has migrated from the excavation zone and entered into structures, sewers and utility conduits.
- (f) Soil remediation. Remediate all oil saturated soils and all soils contaminated above an action level established by the Commissioner on a case by case basis, and measured by laboratory analyses and using the jar headspace vapor measurement technique described in Appendix RQ or another field analytical technique at least as accurate and sensitive approved by the Commissioner. Prior to the filling of any tank or piping excavation, an adequate number of soil samples shall be collected for laboratory analysis to determine whether additional soil remediation shall be required by the Commissioner. A minimum of two (2) such samples shall be collected at a minimum from soils to be analyzed by the jar headspace technique and to bracket the range of hydrocarbon concentrations found in the field. Soil samples shall be analyzed in a laboratory for total gasoline or total fuel oil, as appropriate, or by another comprehensive hydrocarbon laboratory method approved by the Commissioner. Laboratory methods used to analyze soil samples shall be capable of detecting one (1) ppm total gasoline, five (5)ppm of total fuel oil, or one (1) ppm of other parameters with a 90 percent probability, as appropriate.
- (g) Soil treatment. The method and location of contaminated soil treatment or processing (in situ or above ground) shall be approved by the Commissioner and, if to be treated off the facility site, shall comply with applicable regulations administered by the department.

- (h) Soil disposal. Oil contaminated soils may be disposed at a Maine landfill that is specifically licensed by or otherwise has been approved by the Commissioner or department for such disposal or treatment. This subparagraph shall not preclude disposal at a properly licensed out of state disposal or treatment facility.
- (i) Sampling water supply wells. The closest water supply wells to the facility, private or public, located at or surrounding the facility in all directions and within 1000 feet of the facility shall be sampled and analyzed for total gasoline hydrocarbons, total heating oil hydrocarbons, benzene or MTBE as required by the Commissioner. When wells are found contaminated, sampling shall continue to the next furthest well(s) in the same general direction from the facility until it is certain all water supplies contaminated by a leak or discharge are identified. The Commissioner may require other water supplies suspected to be contaminated to also be sampled. The owners of all wells sampled shall be provided with a copy and explanation of the results within seven days. If a public drinking water supply is found to be contaminated, the Bureau of Health in the Maine Department of Human Services shall be notified within 24 hours of discovery.. Water samples shall be analyzed by a laboratory with a minimum detection limit of 10 ppb total gasoline or less, 5 ppb benzene or less 50 ppb heating oil or less, and 20 ppb MTBE or less.
- (j) Treatment of contaminated private water supply wells. Owners of private water supplies found to be contaminated shall be offered and provided with point-of-entry water treatment within 15 days of the discovery of contamination. Such treatment shall reliably reduce the level of contamination below primary drinking water standards and Maine Bureau of Health maximum exposure guidelines. For water supplies contaminated with gasoline or heating oil below 1 ppm or MTBE below 100 ppb, two granulated-activated charcoal filters installed in series may be used. Contamination above these levels shall require treatment by aeration. Other point-of-entry treatment systems may be utilized when demonstrated to be effective and reliable in reducing oil contamination and approved by the Commissioner. If treatment does not reduce contamination levels below required health standards, the Commissioner may require different or additional interim remedial measures to avoid human exposure to oil contaminants.
- (k) Treatment of contaminated public water supplies. The Commissioner may require contaminated public water supplies wells to be provided by the owner, operator or other responsible party with treatment adequate to reduce oil concentrations below primary drinking water standards and Maine Bureau of Health maximum exposure guidelines. The treatment system shall be designed by a professional engineer registered in Maine or working in conformance with Maine's professional regulation statutes and rules, and be approved by the Commissioner, the Maine Bureau of Health and the public water supply owner.
- (l) Water supply monitoring requirements
 - (i) Affected water supplies shall be monitored by sampling once every three (3) months before, between and after treatment devices for as long as the system is operating. Water shall be analyzed for total gasoline and benzene, total heating oil hydrocarbons, or other applicable parameters as required by the Commissioner.

- (ii) Water supplies found to be contaminated with oil below established health standards shall be monitored every three (3) months for total gasoline hydrocarbons and benzene, total heating oil hydrocarbons or other applicable parameters required by the Commissioner. Water supplies located in close proximity to and adjoining to contaminated ones shall along with other wells deemed by the Commissioner to be at significant risk of contamination also be monitored in accordance with the above requirements.
- (iii) Monitoring of contaminated water supplies and supplies deemed at significant risk of contamination shall continue until either use of the supply is discontinued, four (4) consecutive quarterly monitoring results do not detect contamination by oil or its components, or monitoring is suspended by the Commissioner because in his judgment it is no longer needed.
- (iv) Monitoring results shall be provided to the Commissioner and the water supply owner within seven (7) days of receipt.
- (m) Point-of-entry treatment devices shall be maintained in proper operating condition until completion to the Commissioner's satisfaction of a potable replacement drinking water supply or the completion of long-term correction actions and settlement of third party damage claims.
- (n) Within 30 days after confirmation of a leak or other discharge of oil, the owner, operator or other responsible party shall submit a written report to the Commissioner summarizing the initial response and abatement measures taken, their effectiveness, any resulting data or laboratory analyses, documentation that affected parties and the Maine Bureau of Health have been properly notified and the need for hydrogeological characterization and investigation of the extent of contamination, or for additional abatement measures.
- (o) Upon consideration of the level and type of contamination, the sensitivity of the geological setting of the facility, the presence of possible receptors, and proximity to important ground water or surface water resources; the Commissioner may require an hydrogeological investigation in accordance with paragraph 4 below as well as additional initial abatement measures.
- (2) Free product recovery. Free oil product shall be recovered or removed to the satisfaction of the Commissioner at all sites where found. A free product abatement plan shall be submitted for the review and prior approval of the Commissioner. The free product abatement plan shall be submitted within 30 days of discovering free product or another time period approved by the Commissioner. Such a plan shall include, at a minimum:
 - (a) Methods for control of free product migration and the removal or recovery of all free product that is technically feasible shall be the minimum objectives of any abatement plan. Free product removal or recovery shall be conducted in a manner that minimizes the spread of contamination into previously uncontaminated zones using techniques appropriate to the hydrogeological conditions of the site, and that properly treats, discharges or disposes of recovery byproducts.

- (b) Methods to handle any flammable products in a safe and competent manner to prevent fires or explosions.
 - (c) The name of the person(s) responsible for implementing free product removal or recovery procedures.
 - (d) The plan shall include estimated quantity, type and thickness of free product observed or measured in wells, boreholes and excavations.
 - (e) Any discharge of free oil product or a free product and water emulsion is prohibited.
 - (f) The location of any discharge of dissolved phase oil contaminated water.
 - (g) The type of treatment to be applied to and the effluent quality expected from any discharge.
 - (h) The disposition and handling of recovered free product.
 - (i) If removal is to include soil gas venting, the quality and quantity of expected air emissions.
- (3) Hydrogeological investigation of the extent of contamination
- (a) The objectives of the initial hydrogeological investigation are to characterize the geology of the facility and the surrounding area, to determine the concentration and extent of soil and ground water contamination, to determine the direction and rate of contamination movement, to identify what resources and receptors are at significant risk of contamination and to determine the need for and the objectives of long-term corrective actions. The initial hydrogeological investigation study shall cover the facility site and those areas known or suspected to be contaminated by oil.
 - (b) The following existing data, where available, shall be compiled and reviewed:
 - (i) Soils maps;
 - (ii) Aerial photographs;
 - (iii) Well logs for all contaminated wells and wells on properties abutting a parcel with a contaminated well and all other wells within 500 feet of the facility;
 - (iv) A property tax map or other base map at a scale of 1"=500' or less showing existing structures, property ownership, surrounding land uses, right-of-ways, roads, existing underground utilities and public and private water supply wells that are contaminated, on a land parcel abutting a parcel with a contaminated well or within 1000 feet of the facility;
 - (v) Surface water bodies, including intermittent streams, wetlands and flood plains;
 - (vi) Regional bedrock geology; and

- (vii) Surficial geology.
- (c) Fracture trace analysis. Conduct a fracture trace analysis if contamination of ground water in the bedrock is documented or likely. The analysis shall include measurement of fractures observed in bedrock outcrops and on aerial photographs, on a site plan, a U.S. Geological Survey quadrangle, a rose diagram or a polar plot. The relationship between observed fracture patterns to well yields and contamination movement shall be determined. A summary and analysis of available published studies of bedrock fractures relevant to the investigation site shall also be provided.
- (d) Develop ground water and contamination contour maps of the facility utilizing existing wells, where available and at least four (4) ground water monitoring wells located in the surrounding impacted area, one of which shall be located upgradient (Dry wells shall not count toward the minimum four (4) wells). The maps shall include the location of ground water monitoring wells, ground water elevations (measured to the nearest one hundredth of a foot), ground water contours, contamination levels and contours, current and past locations of tanks and piping, location of subsurface waste disposal system and any dry wells, and the location of sewer and any other underground utility lines.
- (e) The following minimum data shall be collected and logged during the boring of ground water monitoring wells:
 - (i) Soil and subsoil conditions and types (described using the unified soil classification system);
 - (ii) Presence and depth of confining strata;
 - (iii) Presence, depth of free oil products;
 - (iv) Depth of water table;
 - (v) Presence and depth of bedrock; and
 - (vi) Continuous split spoon logging screening for oil contaminated soils above the water table with a flame or photo ionization field sampling instrument, using the methodology outlined in Appendix Q or another technique of comparable precision and reliability approved by the Commissioner.
- (f) Water quality sampling and analyses requirements are:
 - (i) Each well shall be properly developed and allowed to stabilize prior to sampling;
 - (ii) Samples shall be collected in accordance with the Department's "Ground Water Sampling Manual for Underground Tank Sites" or by another collection method approved by the Commissioner;

- (iii) Samples shall be analyzed in a laboratory for total gasoline or total heating oil, as appropriate, or by another comprehensive hydrocarbon laboratory method approved by the Commissioner;
 - (iv) Whenever gasoline contamination is suspected, sample analyses shall include methyl tertiary butyl ether (MTBE) and benzene;
 - (v) Laboratory methods used to analyze water samples shall be capable of detecting 10 ppb total gasoline hydrocarbons, 20 ppb MTBE, and 50 ppb total fuel oil hydrocarbons with a 90 percent probability; and
 - (vi) At least two (2) complete rounds of sampling are required from all monitoring points, including surrounding water supply wells, at least one month apart.
- (g) Nearby surface water bodies likely to be affected shall be sampled for oil contamination.
- (h) Within 90 days of the Commissioner's request to perform a hydrogeological investigation, or another time period approved by the Commissioner, the owner, operator or other responsible parties shall submit a report of the findings and conclusions of the initial hydrogeological investigation to the Commissioner for his review and approval. The following data, results and conclusions shall be included in the initial hydrogeological investigation report:
- (i) Data and sample collection and analysis methods used;
 - (ii) Hydrogeological site description addressing the general geological setting of the site, potential and present contamination hazards, bedrock and overburden interconnection, extent and location of ground water and soil contamination, the direction and rate of contamination migration, ground water and surface water resources at risk of contamination, identification of water supply wells contaminated or at imminent risk of contamination, and identification of receptors at risk of hydrocarbon vapor problems;
 - (iii) Soil, ground water and surface water quality data, including all field and laboratory data, and the relationship of measured contaminant levels to State of Maine and Federal allowable contaminant standards or guidelines;
 - (iv) Minimum data and findings to be presented in tables, figures or appendices:
 - (a) Detailed site/locus map;
 - (b) Sufficient geologic maps or cross sections to illustrate the site's geological setting;
 - (c) Ground water contour map;
 - (d) Map of bedrock fractures and lineaments;
 - (e) Geophysical survey map, if any;

- (f) Table or map showing water quality sampling results;
 - (g) Soil sampling results;
 - (h) Boring logs and well installation details; and
 - (i) All testing laboratory reports and results.
- (v) Recommendations addressing the need and objectives for additional hydrogeological investigation or monitoring, and the need for additional immediate abatement measures and/or corrective actions for long-term remediation of oil discharges;
 - (vi) Upon review of the initial hydrogeological investigation study report, the Commissioner may require the owner, operator or other responsible party to undertake further investigations to determine the need and feasibility of long-term corrective actions, or the Commissioner may require the responsible party(ies) to undertake long-term corrective action in accordance with paragraph F below of this section.
- D.** Long-term corrective actions may be required to provide replacement potable drinking water, to mitigate the risk of contamination to private and public drinking water supplies or important ground water or surface water resources, to prevent human exposure to petroleum vapors, to control fire and explosion hazards, to protect or restore important biological resources, and to otherwise protect the public health, safety and the environment. Because of the site specific needs and objectives of long-term corrective actions, the owner, operator or other responsible party may be required by the Commissioner to submit for approval a long-term corrective action plan. The schedule for submitting, the format, additional information needs, the overall contents and the objectives of the long-term corrective action plan shall be determined by the Commissioner on a site by site basis.

E. Public information and participation requirements

- (1) Copies of the leak investigation and confirmation report, the initial response and abatement report, the free product abatement plan, the initial hydrogeological investigation report, and the long-term corrective action plan shall be provided at the time of submission to the Commissioner by certified mail by the owner, operator or other responsible party to the chief municipal officer with jurisdiction or the county commissioners if in an unorganized township, who shall be responsible to ensure these documents will be available to the public for inspection at the municipal or county offices. The leak investigation and confirmation report and free product abatement plan shall also be provided to the local fire chief with jurisdiction.
- (2) The owner, operator or other responsible party shall provide a copy of the leak investigation and confirmation report by certified mail to owners of land parcels abutting the facility and to holders of an easement or a right-of-way for an underground utility conduit on the facility or along a public or private road abutting the facility.
- (3) Prior to approving a long-term corrective action plan, the Commissioner may hold a public meeting to inform and to solicit comments from impacted residents, abutting landowners and

local officials. The Commissioner shall provide written notice seven days in advance of such a meeting to affected parties, including at a minimum impacted residents and the chief municipal officer, and the responsible parties, if known. When a long-term corrective action effort is to be terminated prior to meeting the objectives of the long-term corrective action plan, the commissioner shall provide written notice by certified mail to the chief municipal officer with jurisdiction or the county commissioners if an unorganized township, and to residents who have suffered oil contamination.

- F.** Nothing in this Section limits the Department's authority or discretion under Title 38 MRSA, section 568, to order or undertake immediate remedial or corrective action at sites where evidence of contamination by oil is present.

13. Severability. Should any provision of this rule be declared invalid or ineffective by a court decision, the decision shall not invalidate any other provision of this rule.

See C691app.doc for Appendix

APPENDIX A

REQUIREMENTS FOR CATHODIC PROTECTION MONITORING

1. All measurements shall be made by placing a saturated copper/copper sulfate reference electrode in direct contact with the soil electrolyte.
2. The copper/copper sulfate electrode shall be placed over the center line of each tank and each piping run.
3. All measurements shall be recorded using a direct current voltage measuring device with a minimum of 10 megohms input impedance, accurate to at least ± 12 at 1 volt.
4. A negative voltage of at least 0.85 volts shall be recorded for each metallic tank and piping run.
5. The tank owner is required to maintain, repair or replace the system in accordance with the recommendations of the National Association of Corrosion Engineers, recommended practices 102-85, as amended, whenever the system does not register a negative voltage reading of at least 0.85 volts for each tank or piping run, except as provided for in 18, below.
6. Alternate methods of monitoring, as described in the National Association of Corrosion Engineers Recommended Practice RP-02-85, Recommended Practice for Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage System (April, 1985), as amended, may only be used with written approval of the Commissioner.
7. The frequency of cathodic protection monitoring shall be consistent with the requirements outlined in Section 5(D)(3) and (4).
8. When a negative voltage of at least 0.85 volts is not achieved upon installation, the measurement shall be repeated within six (6) months. Upon failing to achieve a negative voltage of at least 0.85 volts after the six (6) month period, the tank owner shall comply with 15, above.

NOTE: Structure to soil potentials measured when the soil is frozen may be inaccurate because of the increased resistance of the soil electrolyte.

Cathodic protection monitoring schedules should be planned to avoid frozen soil conditions.

APPENDIX B

REQUIREMENTS FOR VOLUMETRIC TANK AND PIPING LINE TIGHTNESS TESTS

Tank tightness test:

1. For all tanks without overfill and spill prevention equipment installed in accordance with Section 5(B)(3) or 6(B)(3) and properly operating, all tests shall be conducted by overfilling the tank at least to grade level. Tanks with operating overfill and spill prevention equipment meeting the requirements of this rule may test underfilled tanks if in accordance with manufacturer's protocols and with any limitations determined by independent testing in accordance with in U.S. Environmental Protection Agency approved protocols
2. All tests shall take into consideration all variables which may affect the determination of a leak rate, including, but not limited to, temperature, pressure, external water table elevation, vapor pockets and tank end deformation.
3. External water table elevation shall be verified via a tank area monitoring well at time of testing for each tank location.
4. All tests shall be performed in strict conformity to all of the testing equipment manufacturer's operating procedures, and the following standard protocols:
 - a. Tests shall not be conducted during a fluctuating ground water table;
 - b. Height-to-volume conversion factors shall be measured rather than calculated;
 - c. The test shall be conducted under nearly constant hydrostatic pressure;
 - d. Product shall be fully circulated or upon completion of the initial filling of a tank four (4) to six (6) hours shall be allowed to lapse to ensure thermal equilibrium; and
 - e. A three (3) hour wait shall be observed after any other product additions during a non-circulatory test method.
5. All testing technicians shall be certified by the manufacturer of the testing equipment.

Piping line tightness test:

1. All pressurized product piping tests shall be performed at 150% operating pressure.

2. All tests shall be performed in strict conformity to all of the testing equipment manufacturer's standard operating procedures.
3. All testing technicians shall be certified by the manufacturer of the testing equipment.

APPENDIX C

REQUIREMENTS FOR PNEUMATIC (AIR) TESTING

For Piping And Tanks:

1. Air pressure testing of tanks and piping shall only be performed on new, empty tanks and piping, which have never contained product.
2. -then conducting-an air pressure test on metallic tanks or piping, all external joints, seams and connections shall be soaped. For fiberglass tanks and piping the entire surface as well as joints and connections shall be soaped.
3. The test shall be maintained for a minimum of 1 hour, and all soaped areas shall be visually inspected for bubbles or any other indication of a leak.
4. Any loss of pressure or appearance of bubbles shall constitute failure of the test.

Piping:

5. Underground piping shall be physically isolated from the tank prior to the test.
6. Underground piping shall be tested to 150% of the maximum anticipated pressure of the system, but not less than fifty (50) pounds per square inch (psi) gauge at the highest point of the system.

Tanks:

7. Tanks shall be tested before being covered, enclosed or placed in service.
8. Tanks shall be tested at not less than three (3) pounds per square inch (psi) and not more than five (5) pounds per square inch (psi) gauge. Gauges used during air testing of tanks shall have a maximum limit of 10-15 pounds-per square inch (psi).

APPENDIX D

INSTALLATION REQUIREMENTS APPLICABLE TO NEW AND REPLACEMENT TANKS

1. All new and replacement tanks must be installed in accordance with manufacturer's instructions and the following nationally accepted codes of practice: American Petroleum Institute Publication 1615, 'Installation of Underground Petroleum Storage Systems'; Petroleum Equipment Institute (PEI) Publication RP100-90, "Recommended Practices for Installation of Underground Liquid Storage Systems"; and National Fire Protection Association Code 30, 30A or 31.

NOTE: Tank installation instructions may require specific aggregate sized peastone or gravel. Instructions may also specify mechanical compaction or layered placement of bedding and backfill. Always consult the installation instructions provided by the manufacturer, prior to installation.

2. Cathodically protected steel tanks must be set on a firm base and surrounded on all sides with at least 12 inches of noncorrosive inert material, such as clean sand, pea stone, or gravel, well tamped in place. The tanks shall be placed in the hole with care, making sure not to scrape the protective coating off coated tanks, or damage attached cathodic protection components. Cathodic protection systems require electrical wiring which is connected to the tank and shall be accessible for voltage readings at the ground surface as well as a location along the centerline of the tank to place a reference electrode in contact with the soil.
3. Cathodically protected steel underground tanks shall be Covered with a minimum of 2 feet of sand, pea stone or gravel or shall be covered with not less than 1 foot of sand on top of which shall be placed a slab of reinforced concrete not less than 4 inches thick. This fill shall be free of debris, boulders, large rocks or other materials, which may cause abrasions to the protective coating of the tank. When tanks are, or are likely to be, subjected to traffic, they shall be protected from damage from vehicles passing over them by at least 3 feet of backfill or, 18 inches of well-tamped backfill plus 6 inches of reinforced concrete or 8 inches of asphalt paving. When asphalt or reinforced concrete paving is used as part of the protection, it shall extend at least 1 foot horizontally beyond the perimeter of the tank in all directions.
4. All cathodically protected steel and nonmetallic fiberglass underground tanks shall be installed in accordance with the manufacturer's instructions. The minimum depth of cover shall be as specified in Section 3, above.
5. New underground tanks shall be tested for tightness before being covered or placed in use by a pneumatic test conducted in conformance with the

requirements of Appendix C or another test method approved by the Commissioner.

NOTE: Air pressure testing shall not be conducted after petroleum product has been placed in the tank, Air pressure testing when petroleum vapors are present in the tank may result in explosion of the tank.

6. All temporary supports must be removed prior to final backfilling.
7. All electrical wiring shall be performed in accordance with the current State of Maine electrical code.
8. Anchoring of tanks shall be required where tanks will be installed in areas where groundwater will be in contact with the tank or where located within a 100 year flood plain as mapped by the Federal Emergency Management Agency (FEMA) or if such mapping is unavailable, as determined ..by the flood of record or by the presence of flood plain soils. When anchoring tanks equipped with cathodic protection, the hold downs must be electrically isolated from the tank. Anchoring of all tanks shall be performed in accordance with the tank manufacturer's specification or PEI Publication RP 100-90.

NOTE: FEMA flood plain maps are available for inspection at most municipal offices.

APPENDIX E

INSTALLATION REQUIREMENTS FOR NEW AND REPLACEMENT PIPING

1. All new and replacement piping must be installed in accordance with the manufacturer's instructions and the following nationally accepted codes of practice: American Petroleum Institute Publication 1615, "Installation of Underground Petroleum Storage Systems", Petroleum Equipment Institute (PEI) Publication RP100-90, "Recommended Practices for Installation of Underground Liquid Storage Systems", and STI Standard R 892.
2. Before underground piping is installed, the trench shall receive as a minimum a 6-inch deep bed of well compacted noncorrosive material such as clean sand, pea stone or gravel. All trenches shall be wide enough to permit at least 6 inches of noncorrosive backfill material around all lines.
3. Prior to being covered or placed in service, all new and replacement piping shall be pneumatically tested for tightness with air pressure in accordance with the requirements contained in Appendix C, or hydrostatically tested in accordance with the requirements of Appendix B.
4. All temporary supports shall be removed prior to final backfilling.
5. All vent piping for storage of Class I liquids shall extend at least 12 feet above the ground surface and positioned such that vapors will not pose a hazardous condition.
6. Fill piping for storage of Class I liquids shall be set back from any building opening in accordance with National Fire Protection Association Codes 30, 30A or 31.
7. Product supply lines which are used in conjunction with pressurized pumping systems shall be installed with a product line leak detection device. All leak detection devices shall be tested for proper operation before the remote pumping system is used after initial installation and once annually thereafter. All leak detectors shall be capable of detecting a leak at a rate of at least 3 gallons per hour at a line pressure of 10 psi within one hour of occurrence with a 95 percent probability of detection and a five (5) percent probability of false alarm.
8. A crash valve shall be installed under dispensers of pressurized pumping systems in accordance with the National Fire Protection Code 30A.
9. Conventional suction systems shall have no more than one check valve per pump. The check valve shall be located as close to the pump as possible, such that any leaks in the line will result in a return of product to the tank. Supply and return piping for a facility storing oil for an emergency standby generator are

exempt from this requirement if secondary containment with continuous interstitial space monitoring is provided in accordance with Section 5(B)(2) of this rule.

APPENDIX F

SPECIFICATIONS AND REQUIREMENTS FOR VERTICAL GROUND WATER MONITORING WELLS

1. Sufficient number of vertical ground water monitoring wells must be installed to detect a leak from every tank by including a minimum of four monitoring wells for each tank or where more than one tank is installed in the same continuous excavation, the minimum number of monitoring wells shall be installed as diagramed below:

When more than one tank is installed in a continuous excavation hole, alternate numbers and positioning of ground water monitoring wells may be used when determined by a Maine registered professional engineer or Maine certified geologist as capable of detecting a leak or discharge from every tank and meeting the performance and installation requirements of Section 5(C) of this rule. Such an alternate ground water monitoring plan shall be certified by a Maine registered professional engineer or Maine certified geologist, and submitted to the Commissioner as part of the facility's registration materials.

2. Monitoring wells shall be a minimum of 2 inches in diameter.
3. The slotted zone shall extend at least 105 feet into the water table and at least five feet above the groundwater surface, as determined at the time of installation; or when installed within a secondary containment liner, the slotted zone shall extend to within six (6) inches of the low point of the liner.
4. The screened portion of the well shall be a minimum of ten (10) feet in length and shall be factory slotted with a slot size of .010 inch.
5. Monitoring wells shall be installed with a cap at the bottom of the slotted section of the well.
6. Monitoring wells shall not be constructed of schedule 20 PVC "sewer" or leach field piping.
7. Monitoring wells shall be constructed of flush joint, threaded schedule 40 PVC or other materials and designs approved by the Commissioner.
8. Monitoring wells shall be numbered such that all monitoring and testing results shall be easily correlated to a specific monitoring well location.
9. All monitoring wells shall be equipped with liquid-proof lockable caps.
10. Monitoring wells shall be properly distinguished from fill pipes.

11. The area around the screened portion of the well shall be surrounded by a porous medium (e.g. sand, gravel or peastone).
12. The outside of the monitoring wells risers shall be sealed using bentonite or a similar product to a depth of 1 1/2 feet below ground surface.
13. Monitoring wells which are located in traffic areas shall be cut off at ground level, clearly marked, and fitted with a limited access cover in accordance with PEI Publication RP100-90 or properly protected from vehicles.
14. Any damaged monitoring well shall be repaired or replaced as soon as possible after discovery of the damage, but at least within 45 days.

FIGURE I

VERTICAL MONITORING WELL

APPENDIX G

SPECIFICATIONS AND REQUIREMENTS FOR MONITORING WELLS WITH IMPERVIOUS BARRIERS

1. Monitoring wells shall be constructed in conjunction with an impermeable membrane, impervious structure or other approved device that is resistant to hydrocarbons, sloped to a sump such that all leaks or discharges will be detected in a product monitoring device (see Figure 2).
2. The impermeable barrier shall slope to a twenty-four (24) inch deep sump, at a slope of 1/4 inch per foot.
3. The impermeable barrier shall extend eighteen (18) inches beyond each side of the tank(s).
4. The impermeable barrier shall run under the entire length of the tank being monitored.
5. The barrier shall be placed under the bedding material and shall not be in direct contact with the tank.
6. Monitoring wells shall be constructed in accordance with the specifications and requirements as contained in Appendix F, except that the well shall be placed in the sump as illustrated in Figure 2.
7. Any damaged or nonfunctioning, monitoring well shall be repaired or replaced as soon as possible after discovery of the damage, but at least within 45 days.
8. In locations where the seasonal high ground water table elevation is above that of the barrier, the combination of an impervious barrier and monitoring well shall not qualify as leak detection under Section 5(B) of this rule.

FIG.2 MONITORING WELL AND IMPERMEABLE LINER

APPENDIX H

REQUIREMENTS FOR WEEKLY MONITORING, HANDLING, AND OBTAINING SAMPLES FOR LABORATORY ANALYSIS

NOTE: Due to the extreme sensitivity of laboratory analytical equipment, it is very important that all bailers, pumps and sample vials be kept clean. A contaminated pump or bailer may cross-contaminate monitoring wells or falsely indicate the presence of hydrocarbons in the ground water. It is also important that the person taking the sample have clean hands free of any grease, oil or gas.

For Weekly Monitoring Perform Steps 1 through 7.

1. All equipment used shall be washed with a detergent soap and triple rinsed with water which is known to be uncontaminated to ensure the device is clean. The individuals performing the sampling shall wash their hands thoroughly prior to sampling.
2. Measure and record the distance from the top of the casing to the water surface.
3. Measure and record the distance from the top-of the casing to the bottom of the well.
4. After checking for free product using a clear bailer and when the volume of water in the well is sufficient remove several bailer volumes of water.
5. Lower the bailer into the well and remove a sample. Pour the contents of the bailer into a clear container.
6. Inspect the sample for free product or an oily sheen. Smell the sample for olfactory evidence of oil;
7. Record the results in a log book which shall be kept at the facility. A sample log sheet is attached in Figure 3.

NOTE: Commercially available pastes, which change color upon contact with hydrocarbons can be spread on a weighted, plastic tape measure or measuring stick and lowered the depth of the well. Pastes are also available which will change color upon contact with water. The use of these pastes are an acceptable method of determining water levels and detecting product in monitoring wells for the purpose of complying with weekly monitoring requirements. The use of an oilwater interface probe is also acceptable.

8. Prior to obtaining samples for laboratory analysis, remove three (3) well volumes of water from each well. The water may be removed by bailing or pumping the

well. For two (2) inch wells, remove approximately 2.5 gallons of water for every five (5) feet of well water.

9. After a sufficient volume of water has entered the well, take a sample for analysis.
10. Samples shall be poured into vials designed for sampling volatile organics, Standard sampling vials are glass, 30-50 milliliters in volume with a teflon cap. Obtain the sample vials from, the lab where the analysis will be performed. Care shall be taken, such that no air bubbles are in the sample vial. Record the sample vial number and the monitoring well number, such that the laboratory analysis may be correlated to a specific well location.
11. Samples shall be securely packed and shipped the same day or in accordance with the protocols for the analysis being conducted. Samples shall be kept cool and not exposed to heat. A record shall be kept of all dates and shipping arrangements.
12. For monitoring wells which are installed with the impervious barrier, which contains less than two (2) feet of water, do not attempt to remove three well volumes of water. It may be necessary to sample the well during or after periods of rain whenever possible.
13. For monitoring wells which do not have enough water to obtain a sample, measure the depth of the well to insure the well is not filled in or has not collapsed. Using a gauge stick or hard plastic tape, apply paste which will turn color upon contact with hydrocarbons. Record the results of both measurements for each well in the logbook.

Figure 3

SAMPLE WEEKLY MONITORING WELL LOG SHEET

Monitoring Well No.

1. Date of Sampling
2. Time of Sampling
3. Distance from Casing to Ground Water
4. Distance from Casing to Bottom of Well
5. Method for Determining Water Levels

6. Instrument Cleaned (Washed and Triple Rinsed)
7. Instrument Used (Bailer. Pump, etc.)
8. Results of Sight and Swell Test
9. Initials of Person Performing the Sampling
10. Comments

APPENDIX I

SAMPLE DAILY INVENTORY REPORTING LOG

APPENDIX J

REQUIREMENTS FOR ABANDONMENT OF UNDERGROUND OIL STORAGE FACILITIES BY REMOVAL

1. The top of the tank shall be exposed.
2. All piping shall be drained and flushed into the tank or another suitable container such that no waste water or product is released to the environment (one or two gallons of water should be sufficient to flush the piping).
3. All liquid which can be pumped out shall be removed, and any liquids which cannot be used for their originally intended purpose shall be disposed of in accordance with the Department's Waste Oil Management Rules, Chapter 860. UL listed explosion proof equipment shall be used to remove Class I liquids. Hoses to remove product shall be inserted to the low end of the tank which may still contain product. Flammable vapors from vacuum trucks removing oil from a tank or facility shall be vented at least 12 feet above the ground surface, effective September 28, 1991.
4. The fill (drop) tube shall be removed. Fill, gauge, and product lines shall be disconnected. The open ends of all lines shall be capped or plugged. All tank openings which will not be used in the inerting procedure shall also be plugged. Only the vent line will remain connected and open until the inerting procedure is complete. The vent line shall be at least 12 feet above the ground surface.
5. All tanks which have contained Class I liquids shall be inerted using one of the procedures outlined below prior to removal of the tank from the ground.
6. All tanks which contained Class I liquids shall be inerted prior to removing the tank from the ground using one of the following methods:
 - a. The tank can be inerted with dry ice in the amount of 1.5 pounds per 100 gallons of tank capacity. Dry ice shall be crushed and distributed evenly over the greatest possible area. During the inerting process, all necessary precautions to prevent ignition in the entire area shall be taken.
 - b. If either
 - 1) an oxygen meter indicates less than six (6) percent oxygen,
 - 2) an explosimeter indicates a condition above the Upper Explosive Limit (UEL), or
 - 3) an explosimeter indicates below 20 percent of the Lower Explosive Limit (LEL) while an oxygen meter indicates greater than eight (8)

percent oxygen; the tank can be removed. After meeting requirements in paragraphs 7 through 10, the tank may be immediately taken to a safe site (limited public access) to vent out naturally or a cleaning facility for proper disposal. The tank will be monitored with an explosimeter calibrated according to the manufacturer's specifications. Measurements with the oxygen and explosimeter will be taken at 1 foot from the bottom of the tank at its lowest end, the middle of the tank's diameter, and at the tank opening.

- c. Other techniques for inerting tanks which have held Class I liquids may be used only with the expressed written approval of the Department of Environmental Protection and the State Fire Marshal's office.

NOTE: All contaminated soil will be removed or otherwise cleaned up to the satisfaction of the Department of Environmental Protection.

- 7. All holes, including corrosion holes, shall be plugged or capped before the tank is moved from the site, except that one 1/8 inch vent hole shall be left to prevent the tank from being subjected to an excessive pressure differential caused by extreme temperature changes.
- 8. If transported, the tanks shall be scraped to remove all loose backfill material adhering to the tank.
- 9. All tanks removed from the ground, regardless of condition, shall be labelled with the following information:

Tank Has Contained Leaded Gasoline (or Flammable Liquid)

NOT GAS FREE

NOTE: Federal regulations under the authority of the U. S. Department of Transportation (49 CFR Section 172.500 et seq.) also require that tanks which have not been purged but are being transported must be properly placarded on the ends and sides with a 'Flammable' placard with the appropriate UN Number (1203 or 1993) attached.

- 10. If transported, the tank shall be secured on a truck such that the 1/8 inch vent hole is located on the uppermost point on the tank.
- 11. All piping shall be removed from the ground whenever practicable. Piping that cannot be removed will be blown clear of residual product with an inert gas and

securely plugged at all ends. All necessary precautions to prevent spillage or ignition in the entire area shall be taken.

12. Some tank disposal facilities require that tanks be cleaned of sludge and residues prior to accepting the tank. Any cleaning and temporary storage operations shall be performed at a site acceptable to local public safety officials and shall not be located on a sensitive geologic area, as defined in Section 3 of these Regulations. Any cleaning operation involving flammable materials or generating flammable vapors shall be performed at a remote site where public access can be restricted by fencing or other suitable means 24 hours/day. Tank cleaning shall be performed at the site where the tank is removed only with the permission of the local public safety official.

NOTE: If cleaning a tank at the site of its removal, it is recommended that the tank be cleaned while still in its excavation hole, the safest location in the event of an explosion or fire.

13. The only acceptable means of disposal of underground oil storage tanks are:
 - (a) sale to a properly approved junk or scrap dealer;
 - (b) disposal at a tank processing facility meeting the criteria of Appendix L of these rules and approved by the Department;
 - (c) use as culverts provided that (i) tanks are steam cleaned prior to use and any residues are properly cleaned and disposed of and (ii) such use will not violate any other laws, regulations, or permits promulgated under Federal, State, or local jurisdiction; or
 - (d) other techniques for disposal of tanks, provided the expressed written approval of the Department of Environmental Protection and the State Fire Marshal's office has been obtained.
14. Tanks will be stored with all bung holes open and positioned at a 45 degree angle down from horizontal to prevent rain from entering the tank and to allow vapors to escape.

APPENDIX K

REQUIREMENTS FOR ABANDONMENT OF UNDERGROUND OIL STORAGE FACILITIES BY FILLING IN PLACE

1. Piping shall be drained and flushed into the tank.
2. All liquid which can be pumped out, including that liquid requiring a hand pump to remove, shall be removed and any liquids which cannot be used for their originally intended purpose shall be disposed of in accordance with the Department's Waste Oil Management Rules, Chapter 860. UL approved explosion proof equipment shall be used to remove Class I tanks which may still contain product. Flammable vapors from a vacuum truck removing oil from a tank or facility shall be vented at least 12 feet above the ground surface, effective September 28, 1991. All sludge will also be removed, handled, stored and disposed of in accordance with Chapter 851 of the Department's hazardous waste rules. Where it can be demonstrated to the Department's satisfaction that a sludge is not a hazardous waste, it may be disposed at a solid waste disposal facility licensed for such wastes.
3. The top of the tank shall be exposed.
4. The fill (drop) tube shall be removed. Fill, gauge, and product lines shall be disconnected. Open ends of all lines, except the vent line, shall be capped or plugged.
5. All tanks which contained Class I liquids shall be rendered inert by using one of the following methods:
 - a. The tank can be inerted with dry ice in the amount of 1.5 pounds per 100 gallons of tank capacity. Dry ice shall be crushed and distributed evenly over the greatest possible area. During the inerting process, all necessary precautions to prevent ignition in the entire area shall be taken.
 - b. The tank can be ventilated with air, using a small gas exhauster operated with compressed air or-by other suitable means. The flow of air shall be directed through the length of the-tank. Vapor concentration in the tank shall be monitored with a combustible gas indicator, and the process shall continue until the tank is inert. During the purging process, all necessary precautions, in accordance with American Petroleum Institute Publication 1604, 'Removal and Disposal of Used Underground Petroleum Tanks' to prevent ignition in the entire area shall be taken.
 - c. Vapors from the tank shall be vented at least 12 feet above the ground surface.

6. A suitable, solid, inert material shall be introduced through the hole in the top of the tank. The following materials are suitable for this purpose:
 - a. Sand. Sand that is free of rocks is suitable for filling. It may be poured dry as long as it flows freely. When the tank is nearly full, sand should be washed into the tank with a nominal amount of water and puddled to cause the sand to flow to the tank ends. The use of large amounts of water shall be avoided.
 - b. Sand and Earth Fill. The tank can be (1) filled with sand to approximately 80 percent of the calculated capacity, and (2) filled to overflowing for the remaining capacity using a mixture of soil and water in a free-flowing mud.
 - c. Cement or mortar.

APPENDIX L

Requirements for Underground Oil Storage Tank Processing Facilities

1. Applicability:

- A. The requirements of this Appendix apply to underground oil storage tank processing facilities where tanks used for the storage of oil and abandoned by removal are cleaned, temporarily stored and processed prior to recycling or re-use of their materials.
- B. For the purpose of this Appendix the cleaning operation of a tank processing facility shall include those areas and activities where vapors, liquids, solids, sludges, rust, scale and other residues are removed and cleaned from an abandoned underground oil storage tank, including buffers, structures, roads, and equipment.
- C. For the purpose of this Appendix, the processing operation of a tank processing facility shall include those areas and activities where cleaned tanks are cut, crushed, reduced in volume or otherwise modified prior to sale or re-use of their materials.

2. Siting:

Underground oil storage tank processing facilities shall comply with the following provisions:

No Processing facility shall be located:

- A. On a coastal Wetland or Coastal Sand Dune, as defined in 38 M.R.S.A., Section 472;
- B. On a freshwater wetland, as defined in 38 M.R.S.A. Section 406;
- C. On a floodplain, as defined in Chapter 400 of Maine Solid Waste Management Rules;

NOTE: In most areas of Maine, the floodplains have been mapped by the Federal Emergency Management Agency (FEMA). Maps are available at most municipal offices.

- D. Within a sensitive geological area, as defined in Chapter 691, Section 3 of Maine Regulations for Underground Oil Storage Facilities;
- E. Within 300 feet of a classified body of surface water; or

- F. Within 100 feet of an adjacent property boundary.

NOTE: If the area of a Facility, including all operations, temporary storage areas, structures, roads, and buffers exceeds three acres, the Owner must further obtain approval under the Site Location of Development Law, and the Department's Solid Waste Management Regulations. Application may be made through the Department's Bureau of Solid Waste.

3. Design

- A. The entire facility shall be surrounded by a fence or otherwise secured to the Commissioner's satisfaction to prevent unauthorized access to the tanks. Signs stating "Caution - Flammable Materials", "No Smoking" and "No Entry of Unauthorized Personnel" shall be placed along the fence at intervals no greater than 50 feet.
- B. A 25-Foot fire protection buffer shall be cleared of combustible materials on all sides of the Facility. This buffer shall be maintained at all times free of all structures, equipment, cleaned tanks, and other Facility activities. Overhanging branches and vegetation shall be cut back to distances safe from fire and explosion. The fire buffer may lie outside the fenced portion of the Facility.

Note: Graveling the area and removing the vegetation are examples of means which would normally achieve this purpose.

- C. The facility shall be equipped with fire protection equipment of the size, quantity, type, and location directed by local fire officials or by the Commissioner. Equipment shall be kept operable at all times.
- D. The Facility shall be equipped with a means of communication (such as a telephone or two-way radio) with fire and medical emergency personnel.
- E. A Contingency Plan meeting the requirements of 40 CFR 264.52 shall be developed, which provides for prompt response to fire and explosion hazards, and for containment and removal of any spilled material. A copy of the contingency plan shall be sent to the Commissioner and to local public safety officials. A copy shall be kept at the facility at all times.
- F. Cleaning Operations Design
 - (i) Any area underlying a Cleaning Operation shall be surrounded by a berm of sufficient height to contain all residues, cleaners and precipitation which may be contaminated by these substances. This area and berm shall be underlain by a clay or synthetic liner, which in turn shall be completely covered by a firm, continuous

working surface (such as concrete) which is compatible with hydrocarbons. The area shall be equipped with a collection system which contains for removal of all solid and liquid tank residues, cleaners, and all precipitation which may be contaminated by these substances.

- (ii) A clay liner shall be at least two feet thick and shall have a permeability no greater than 10⁻⁷ cm/sec. A synthetic liner shall be at least 40 mils thick and shall be of a material compatible with all residual tank contents and cleaners. It shall be installed in accordance with the manufacturer's specifications. An independent professional engineer or authorized liner manufacturer's representative shall observe the entire installation and testing, and shall certify to the Department that the installation, testing, and repairs occurred in accordance with the manufacturer's specifications. Either a clay or synthetic liner shall extend at least ten feet in all directions beyond all tanks requiring containment, and shall be anchored to the berm in a secure fashion.
- (iii) The collection sump, tanks, and all equipment shall be of adequate size to contain the volumes of tank residues, cleaners, and any contaminated precipitation that will be generated. They shall be constructed of materials compatible with the wastes generated.
- (iv) A tank shall be deemed clean when:
 - a. all loose scale has been removed from the inside of tanks walls, and
 - b. all solid and liquid residues have been removed from tanks walls, and
 - c. the tank has been ventilated by air, steam, or some other means so that its atmosphere does not exceed 20% of the Lower Explosive Limit (LEL).

G. Processing Operations Design

- (i) Any processing operations areas shall be physically isolated from the cleaning operations area such that no flammable or explosive hazards exist in the processing areas due to cleaning operations.
- (ii) Processing Operations Areas need not be lined, but must be maintained in a manner so that processing debris (eg. cuttings, etc.) can be collected and removed.

H. Temporary Storage Area Design

- (i) Tanks at a Processing Facility may be temporarily stored on site for less than 12 months, provided the following conditions are met:
 - a. All tanks shall be stored in a "chocked" condition to prevent rolling, and must have the top openings (manufactured openings or bungs) open and located at a 45 degree angle from the ground to prevent rainfall from entering and to facilitate venting. Any corrosion or non-manufactured holes must be plugged._
 - b. A 3-foot separation shall be maintained between all tanks to allow weekly inspection for leakage and cleanup of spills. Any tanks found to be leaking must be immediately cleaned in accordance with these rules.
 - c. Any discharge of oil to soil or groundwater in any unlined portion of the facility must be immediately reported and removed to the Departments satisfaction.
- ii. Under no circumstances shall a tank be stored or remain at a facility for a period exceeding one (1) year from the date of the tanks arrival at the facility.

4. Operation

- A. All tanks arriving at a Processing Facility shall be brought immediately into a secured area and inspected. The inspector shall note tank condition (severe corrosion, splits, number & size of holes) and evidence of leaks such as production outside tank surfaces, or adhering contaminated soil. This information shall be recorded in a facility log book.
- B. Following inspection, all tanks shall be marked conspicuously and permanently with (1) a serial number assigned by the facility, (2) date of receipt and (3) product last stored, if known.
- C. Any tanks containing liquids shall be pumped dry immediately following inspection. Any pumping or removal of liquids shall be conducted in a lined portion of the Facility. Any liquid-free tanks may then be brought to a temporary storage area provided that they are stored in accordance with Appendix L Section II(H) of these Regulations.
- D. Solid and liquid residues from tank cleaning or processing will be disposed of in compliance with appropriate Federal, State, and local laws, regulations, and ordinances. All residues will be presumed hazardous

waste, requiring disposal under the provisions of the Maine Hazardous Waste Management Rules, Chapters 850-857, unless testing or other information establishes, in accordance with Chapter 850, that they are not.

NOTES: Sludges and solid wastes found to be non-hazardous are Special Wastes and subject to the requirements of the Maine Solid Waste Management Rules, Chapter 400, Section 11, administered by the Department's Bureau of Solid Waste. Liquid wastes found to be non hazardous are Waste Oils and subject to the requirements of the Waste Oil Management Rules, Chapter 860 of Department Regulations.

- E. After tank identification, cleaned tanks shall be brought to the Processing Operation area unless stored in accordance with paragraph C above. Tanks not cleaned upon arrival shall be brought to a Cleaning Operations area, unless stored in accordance with paragraph C above.
- F. The Facility shall maintain a log book which is kept at the Facility at all times. It shall be kept current and made available to Department inspectors upon request. The log book shall contain the following information for each tank:
 - (i) Facility-assigned serial number
 - (ii) location from which tank was removed
 - (iii) tank size
 - (iv) contents when last in use
 - v) tank condition upon arrival (e.g. sound, badly corroded, number of holes)
 - (vi) date cleaned
 - (vii) date processed
 - (viii) final disposition (sold whole, cut up, crushed)

In addition the log book shall record information concerning types and volumes of all residues generated, how they were disposed of, and when. All records shall be kept for at least three years.

- G. Groundwater monitoring shall be conducted at the Facility. A groundwater monitoring plan developed and certified by a Maine Certified Geologist shall be submitted to the Commissioner as part of the of the Facility application. The plan shall provide for a minimum of one upgradient and

three downgradient wells, located and screened to detect releases of hydrocarbons as early as is practicable.

APPENDIX M

CATHODIC PROTECTION TESTER CERTIFICATION REQUIREMENTS

1. The requirements of this appendix apply only to individuals not certified by the Maine Board of Underground Tank Installers for underground oil or hazardous substance facility installation. Maine certified installers automatically meet the definition of a cathodic protection tester as long as his/her installer certification remains valid
2. Criteria for certification by the Commissioner:
 - a. Only individuals are eligible; and
 - b. Valid certification by National Association of Corrosion Engineers (NACE) as a cathodic protection tester; or a combination of two (2) years documented experience doing galvanic cathodic protection system testing, and six (6) college credit hours or 40 hours of other technical training courses in soil resistivity, structure to soil potential, and component electrical isolation measurements of buried metal piping and tank systems.
3. Application procedures:
 - a. On an application form provided by the Commissioner, applicants must provide the following information and certify its accuracy.
 - (i) Applicant's name, business mailing address, and telephone number;
 - (ii) Documentation of NACE certification;
 - (iii) List and description of relevant work experience, including employer's name, address and telephone number;
 - (iv) List of relevant college courses, number of credit hours and a copy of the college transcript;
 - (v) List and description of other relevant technical training courses and documentation of satisfactory completion; and
 - (vi) Three (3) written professional references.
 - b. Upon the review and approval of an application as meeting all the certification criteria of this rule and 38 M.R.S.A., Section 567-A(l), the Commissioner shall issue a certificate valid for 12 months.

- c. Requests for recertification shall be made to the Commissioner in writing 30 days prior to expiration of the existing certificate. The Commissioner may deny a recertification request on any one the following grounds: documented improper cathodic protection monitoring or measurements not in compliance with the requirements of this rule or loss or expiration of a tester's NACE certification. An individual having lost his/her certification may reapply after 12 months and completion of an additional 40 hours of relevant technical training or recertification by NACE.
- d. The Commissioner may undertake enforcement actions against cathodic protection testers for violations of this rule, consistent with 38 M.R.S.A., Subsection 347.

APPENDIX N

CORROSION EXPERT CERTIFICATION REQUIREMENTS

1. The Commissioner may certify a person as a corrosion expert on finding that the person has a thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by professional education and related practical experience and is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Only individuals shall be certified.
2. Criteria for certification by the Commissioner.
 - a. Documentation of valid certification by the National Association of Corrosion Engineers (NACE) as a qualified corrosion expert; or
 - b. Registration as a professional engineer in Maine, and certification or licensing, by a professional organization or educational institution other than NACE, based on adequate education and experience in corrosion control of buried or submerged metal piping systems and metal tanks.
3. Application procedures:
 - a. On an application form provided by the Commissioner, applicants must provide the following information and certify its accuracy.
 - (i) Applicant's name, business mailing address, and telephone number;
 - (ii) Documentation of NACE or other professional or educational institution's certification;
 - (iii) Documentation of Maine's registration as a professional engineer, if needed;
 - (iv) Description of relevant work experience, college courses (including transcript) and other technical training courses; and
 - (v) Three (3) written professional references.
 - c. Upon the review and approval of an application as meeting all the certification criteria of this rule and 38 M.R.S.A., Section 567-A(2), the Commissioner shall issue a certificate valid for 12 months.
 - d. Requests for recertification shall be made to the Commissioner in writing 30 days prior to expiration of the existing certificate. The Commissioner

may deny a request for recertification request on any one of the following grounds: A documented improper installation of corrosion protection not in accordance with the requirements of this rule, the expiration or loss of NACE or other professional certification, or loss of a valid professional license as a registered Maine professional engineer. An individual having lost his/her certification may reapply after 12 months for recertification consistent with requirements of paragraph 2 above.

- e. The Commissioner may undertake enforcement actions corrosion experts for violations of this rule, in accordance with the provisions of 38 M.R.S.A., Subsection 347.

APPENDIX 0

DESIGN AND INSTALLATION STANDARDS FOR SECONDARY CONTAINMENT USING AN EXCAVATION LINER

1. Tank and piping excavation liners shall be constructed of synthetic materials, compatible with the product to be stored and sufficiently thick, and impermeable to direct a leak or discharge to a monitoring point and permit its detection. Soil, clay, bentonite-sealed soil and asphalt liners are prohibited.
2. Liners shall have a permeability of 10^{-6} cm/sec or less for the product to be stored. Concrete excavation liners shall be sealed or coated on the inner wall with an oil compatible sealant or coating compound.
3. Synthetic liners shall be at least 0.03 inches thick and installed in accordance with manufacturer specifications. All liner panels are to be factory seamed or field seamed by an authorized representative of the manufacturer.
4. For cathodically protected tanks and piping, the liner must be installed so that it does not interfere with the proper operation of the cathodic protection system. Sacrificial anodes must be located within the excavation liner.
5. Ground water, soil moisture, or rainfall must not render the interstitial leak detection or sampling method inoperative so that a release could go undetected for more than 30 days.
6. The site must be assessed to ensure that the secondary liner is always above the ground water and not in a 25 year flood plain, unless the liner and leak detection system are designed for use under such conditions.
7. Monitoring wells to be used for leak detection in tank excavation liners are to be designed and installed in accordance with Appendix F of this rule.
8. For tanks with an internally fitted liner, automated leak detection between the liner and the inner wall must be provided.
9. Excavation liners for piping must drain to a monitoring sump or to the interstitial space monitoring system for the tank.

APPENDIX P

REQUIREMENTS FOR A SITE ASSESSMENT AT FACILITY CLOSURE OR TANK ABANDONMENT

1. The purpose of an site assessment at the time of facility closure or abandonment is to determine when discharges of oil have occurred requiring notification of the Commissioner and corrective Action by the owner, -operator or another responsible party.
2. General requirements:
 - a. A site assessment meeting all the requirements of this Appendix shall be completed prior to the completion of facility closure or the abandonment of any portion of a facility in accordance with Section 11 of this rule.

NOTE: See the accompanying chart on the following page for a summary of the site assessment requirements of this appendix.

- b. The site assessment shall be supervised by, and the site assessment report shall be certified by a Maine Certified Geologist, Registered Professional Engineer, or other persons meeting the requirements of Maine's professional regulation statutes and regulations for geologists or professional engineers practicing in Maine, except as provided for in paragraph 8 of this Appendix.
 - c. The findings of all site assessments conducted pursuant to this rule shall be presented it a written report with supporting data, addressing the requirements of this Appendix.
 - d. One copy of all site assessment reports conducted pursuant to this rule shall be submitted to the Commissioner in an envelope endorsed "UST Site Assessment", by the facility owner at the following address within 45 days of tank and piping removal or abandonment in place:

UST Program Administrator
Bureau of Oil & Hazardous Materials Control
Maine Department of Environmental Protection
State House Station 117
Augusta, Maine 04333

In the event a site assessment finds evidence of a discharge, two (2) additional copies of the site assessment report are to be submitted, one to the Commissioner at the above address and one to the chief municipal official of the municipality within which the facility is located or to the County Commissioners if located in an unorganized township.

- e. Site assessment reports are to follow the following general format:
 - (i) Summary cover sheet including, owner, operator and facility name, Maine facility and tank registration numbers, date of site assessment and whether evidence of a discharge or leak was found;
 - (ii) Purpose of site assessment;
 - (iii) Facility and site location;
 - (iv) Facility and site history;

SITE ASSESSMENT AT FACILITY CLOSURE

NOTE: This chart summarizes the process of conducting a site assessment at the time of closure or abandonment of a tank or facility. It is for general information only and should not be relied upon without reference to the text of this appendix.

- (v) Description of the site assessment methods utilized, including field instrument methods, laboratory methods and quality assurance/quality control (QA/QC) procedures followed;
 - (vi) Findings of site assessment; and
 - (vii) Recommendations and conclusions.
- 3. The following information, concerning facility and site location, shall be included in all site assessments:
 - a. Mailing and street address of facility;
 - b. Tax map and lot number;
 - c. U.S. Geological Survey 7 1/2 minute (15 minute if 7 1/2 minute is not available) topographical map showing the precise location of the facility adequate to determine its longitude and latitude;
 - d. A facility layout plan showing locations of property boundaries, tanks product and vent lines, dispensers, on-site wells or surface water bodies, subsurface waste water disposal systems, dry wells, sewer lines and underground utilities;

4. The following additional land use information shall be provided where evidence of a discharge of oil has been found:
 - a. A description of surrounding land uses and the extent of public drinking water service to all abutters and the surrounding area; and
 - b. The location of possible contamination receptors including, at a minimum, private water supplies within 300 feet of the facility, public water supplies within 1000 feet of the facility, surface water bodies, utility conduits, and structures with a basement or crawl space.
5. If evidence of a discharge of oil is found, the site assessment shall also include the following facility and site history information:
 - a. History of site ownership and operation, if known, for previous 10 years, including:
 - (i) Name, current mailing address of all current site and facility owners and operators; and
 - (ii) Years of ownership and operation of each previous owner and, if known, operator.
 - b. Past and present land use(s) of site and facility.
 - c. Current and past product storage and distribution system, including:
 - (i) Date of installation of all tanks;
 - (ii) Tanks or piping abandoned in place;
 - (iii) Size and construction of tanks and piping;
 - (iv) Type and length of time specific oil products stored;
 - (v) Summary of results of daily product inventory reconciliation for the operating life of current and if available, previous facilities;
 - (vi) Tank and piping repairs, replacements and/or removals, and the condition of removed or repaired facility components for the operating life of the facility, if known;
 - (vii) All precision test results, if performed, for previous and current facility, if available;

- (viii) Availability and results of leak detection monitoring if any, including ground water monitoring wells;
- (ix) Other evidence of a leak or discharge as defined in Section 5(D)(8) of this rule, and associated with the current or a previous facility at the same location;
- (x) Date and description of all known leaks or discharges on the site including type of oil, quantity lost and recovered, cleanup actions taken and off-site effects, if any; and
- (xi) Summary of work performed and results of previous site assessments and contamination investigations.

6. Site Assessment Requirements when Tanks and Piping are Removed:

- a. Visual inspection of tanks, piping and other underground facility components upon removal for presence of holes, loose fittings and joints, cracks, fractures and evidence of oil stains. If any of the conditions above are found the facility owner or operator shall notify the Commissioner of the occurrence of a discharge within 24 hours of discovery.
- b. Visual inspection of the tank and piping excavation for any evidence of a discharge of oil, including oil stained or saturated soil, strong petroleum vapors emitted from soil or an oil sheen on groundwater in the excavation. The presence of any of the above conditions shall be considered an indication of a discharge of oil and shall be reported to the Commissioner within 24 hours of discovery by the facility owner or operator and prior to the excavation hole is filled. The owner shall immediately proceed with an investigation and corrective action measures in accordance with Section 12 of this rule.

NOTE: OSHA regulations governing entering excavations and confined spaces should be strictly followed. Excavations should not be entered if above 20% of Lower Explosive Limit (LEL), or less than 19.2% or greater than 25% oxygen.

- c. Visual inspection of the entire facility for surface spills and discharges. Such spills and discharges shall be reported to the Commissioner in accordance with Section 12(B).
- d. Upon visual discovery of evidence of a leak or discharge of oil at a heavy oil facility and reporting such to the Commissioner, the site assessment investigation at the time of closure may be terminated except where a tank or piping was located on or in bedrock in which case the presence of contaminated ground water shall be investigated in accordance with

paragraph 6(e). All other facilities shall proceed further with the investigations required by this paragraph.

The site assessment shall proceed searching for the presence of oil pollution not visible to the human eye and to determine the concentrations of oil visibly evident in soils of the tank and piping excavation. The tank and piping excavation areas shall be screened for oil vapors using a field instrument, such as a flame ionization detector (FID) or photoionization detector (PID). Samples shall be collected from areas showing the highest readings and analyzed by laboratory analysis or using the field methodologies described in Appendix Q or another method of similar accuracy and sensitivity approved by the Commissioner. The Commissioner shall be notified by the owner or operator within 24 hours of any laboratory analysis or field jar or polyethylene bag headspace reading equal to or exceeding a notification level shown in the table below. Readings below the notification level are not required to notify the Commissioner if there is no other evidence or indication of a discharge at the facility. When using a field method for analysis of soil suspected to be contaminated with more than one of the oil products listed in the table below, the notification level for the least volatile oil shall be utilized. Only laboratory results analysed by a method able to detect five (5) ppm total gasoline, 10 ppm total fuel oil or five(5) ppm. of another comprehensive hydrocarbon parameter approved by the Commissioner shall be accepted. Total petroleum hydrocarbons by EPA Method 418.1 is not an acceptable method.

Notification Levels (ppm)

Soil Contaminant	FID	PID	Laboratory
Gasoline	200	200	5
Kerosene	100	100	10
#2 fuel oil or diesel fuel	50	50	10

- e. Where a tank or piping run has been installed on or-in bedrock without adequate soil backfill or bedding to test for contamination, a minimum of two down gradient ground water monitoring wells shall be installed under the supervision of a Maine Certified Geologist or Maine Registered Professional Engineer. Additional wells may be required by the Commissioner for tanks with more than 20,000 gallons capacity. Monitoring wells shall be sampled for visual and olfactory evidence of oil as well as for dissolved phase product utilizing a total gasoline or total heating oil hydrocarbons laboratory analysis method depending on the oil

products stored at the facility in the past. Other comprehensive hydrocarbon laboratory methods may be utilized if approved by the Commissioner. If gasoline was stored at the facility analyses shall include methyl tertiary butyl ether (MTBE) and benzene. Only results from laboratories able to detect 10 ppb gasoline, 5 ppb benzene 50 ppb heating oil and 20 ppb MTBE with a 90 percent probability will be accepted. The detection of oil shall be reported to the Commissioner within 24 hours by the facility owner or operator. This subparagraph shall apply to all facilities required to do a site assessment, including heavy oil facilities.

7. Site Assessment Requirements when Tanks and Piping are Abandoned In Place:

- a. The requirements of this section apply whenever a facility or any portion of a facility are abandoned in place and are not removed. If a tank, piping section, or other underground component is not removed, these requirements only apply to that particular portion of the entire facility.
- b. Inspection of all visible portions of the facility for evidence of a leak, spill, overfill or other discharge, including areas around the fill and vent pipes.
- c. Evidence of contaminated soils from a tank leak shall be determined by either of the methods below:
 - (i) A minimum of two soil borings shall be made per tank, located as close as technically feasible to intersect any oil contamination from the surface to below the estimated depth of the tank bottom or to bedrock or below the groundwater table, whichever is shallower.. Additional number of borings may be required by the Commissioner for tanks with more than 20,000 gallons capacity. The borings shall be. logged and screened continuously for oil vapors using a photo or flame ionization field instrument as removed from the ground. A sample shall be taken from soil showing the highest reading for the jar headspace analysis using the method outline in Appendix R or another Commissioner approved method of comparable accuracy and sensitivity.
 - (ii) Other subsurface investigation methods approved by the Commissioner.
- d. Piping not removed such that the entire excavation cannot be inspected shall conduct a soil gas survey along its length where physical soil characteriztics, ground water depth and product type allow; or a minimum of two soil borings shall be installed and sampled in accordance with the above procedures for tanks.
- e. When a facility was installed on or into bedrock, when borings encounter bedrock before reaching an elevation below that of the bottom of the tank

or piping, or when ground water is encountered prior to reaching the depth below that of the tank or piping; a minimum of two ground water monitoring wells shall be installed down gradient, as close as feasible. For tanks greater than 20,000 gallons capacity, the Commissioner may require additional monitoring wells. Monitoring wells shall be sampled for visual and olfactory evidence of oil as well as for dissolved phase product utilizing a total gasoline or total heating oil hydrocarbons laboratory analysis method, depending on the oil products stored at the facility in the past. Other comprehensive hydrocarbon laboratory methods may be utilized if approved by the Commissioner prior to use. If gasoline was stored at the facility, analyses shall include methyl tertiary butylether (MTBE). Only results from laboratories able to detect 10 ppb total gasoline, 50 ppb total heating oil and 20 ppb MTBE with a 90 percent probability will be accepted. The detection of oil shall be reported to the Commissioner within 24 hours by the facility owner or operator.

- f. When all of the above site assessment procedures for a facility to be abandoned in place are not technically feasible, another procedure may be utilized when approved by the Commissioner prior to the initiation of facility closure.
8. Site Assessment Requirements for Facilities with Commissioner Approved Leak Detection:
- a. A facility or a portion of a facility with leak detection meeting the requirements of Sections 5(B)(2) or 5(C) and properly operating for the 30 days prior to initiating closure and emptying tanks and piping of oil may not be required to initiate the site assessment procedures in paragraphs 6 and 7 of this Appendice. Site assessments for facilities meeting the above description are not required to be conducted by a professional engineer or certified geologist.
 - b. The surface of the facility shall be inspected for evidence of spills, overfills, and other discharges.
 - c. Evidence that the leak detection equipment is properly operating and calibrated shall be provided, where appropriate.
 - d. Leak detection monitoring results shall be provided for the last 30 days.
 - e. Evidence of a discharge of oil found during the course of a site assessment shall be reported to the Commissioner by the facility owner or operator within 24 hours of discovery.

APPENDIX Q

FIELD DETERMINATION OF SOIL-HYDROCARBON CONTENT

BY JAR/POLY BAG HEADSPACE TECHNIQUE

INTRODUCTION:

The following is a procedure acceptable to the Maine Department of Environmental Protection (DEP) for determination of the hydrocarbon content of soils contaminated only by oil and petroleum products. A soil sample is placed in a sealed jar or polyethylene bag and the volatile hydrocarbons are allowed to come to equilibrium with the jar headspace. The headspace hydrocarbon concentration is then measured with a calibrated photo- or flame-ionization (PID or FID) instrument, approved by the Commissioner, and the result expressed in parts-per-million (ppm) of benzene

NOTE: At facilities requiring investigation or remediation of a leak or discharge, soil samples are also to be analyzed by a laboratory gas chromatographic (GC) method in order to correlate field- and laboratory-determined hydrocarbon concentrations.

2. APPLICABILITY:

This procedure is intended for use estimating gasoline, #2 heating oil, diesel fuel, kerosene, and other chemically and physically similar oil contamination in mineral soils, having water contents between bone-dry and saturation. A soil's grain size distribution and organic carbon content may effect the partitioning of hydrocarbon between soil, liquid, and vapor phases. Weathering of the hydrocarbon product will also decrease the proportion of volatile-and soluble constituents, thereby decreasing the instrument's response. None of these limitations invalidate the method as a technique for approximation of low-level petroleum hydrocarbon concentrations.

3. EQUIPMENT-REQUIRED:

- a. Shovel; trowel;
- b. Lab containers (VOA or SVOA) of type and quantity for hydrocarbon to be sampled at expected concentrations;

NOTE: Laboratory should be consulted in advance to determine their needs.

- c. Metal dial-type thermometer, -10°C to 50°C;

- d. (Jar Headspace Method only) Glass, wide-mouthed, metal screw-top, 16-oz. jars, with cardboard lid liner removed, and 1/4" hole drilled through center of lid;
- e. (Jar Headspace Method only) Roll of heavy duty aluminum foil;
- f. (Poly Bag Method only) 1-quart, zip-lock-type polyethylene bags;
- g. Means of measuring 250 gm soil sample, plus or minus 10 gms. (e.g., a "calibrated" container, a "Weight Watchers" spring balance);
- h. Photoionization (PID), or Flame ionization (FID) instrument approved by the Commissioner;

NOTE: A list of approved instruments and the standard protocol whereby other instruments may become approved is available from the Commissioner.

- i. Calibration equipment for instrument chosen; and
- j. Decontamination equipment including soapy water and clean distilled water in squirt bottles or pressurized cannisters.

4. ANALYTICAL PROCEDURE:

- a. Determine the location at which the sample is to be taken. If possible, identify an uncontaminated location at the same site from which soil of similar texture and moisture content can be obtained, to serve as a field "blank".
- b. Measure a 250 gm. sample of the soil into a wide-mouthed jar or polyethylene bag. In so far possible, samples should be mineral soil free of vegetation and stones larger than 1/2" in diameter. Seal the samples immediately in the jars by placing a square of foil over the mouth and screwing on the lid, and the bag by zipping the closure. Sufficient air should be left in the bag so that the instrument can withdraw an adequate headspace sample.
- c. Repeat this procedure for three (3) more samples, all gathered within a 2'x2' area.
- d. Shake the jars for 30 seconds to thoroughly mix the contents. If bags are used, they may be kneaded until the contents are uniform.
- e. Measure the samples' temperature by sacrificing one jar or bag. If necessary, adjust all sample temperatures to between 15°C and 25°C by

bringing sample containers into a warm vehicle or immersing in a water bath. In warm weather, samples should be kept in a shaded, ventilated area during headspace development and analysis.

- f. Allow at least fifteen (15) minutes but not more than two (2) hours for soil hydrocarbons to reach equilibrium with the headspace.
- g. If samples are to be taken for laboratory analysis, they should be collected and preserved per laboratory protocols at this time. Preferably, these samples should bracket a wide range of hydrocarbon concentrations including the highest and lowest concentration at the site.
- h. Warm up and calibrate the PID or FID instrument to be used according to the manufacturer's recommended procedure. If a calibration gas other than benzene is used, either 1) calibrate the instrument to read directly in ppm benzene, or 2) find in its operating instructions the relative response factor to convert measured values to ppm benzene. The operating range of certain instruments may be extended if the instruments are calibrated to read ppm benzene directly.

NOTE: The UV source in PID instruments should be cleaned at least weekly per the manufacturer's recommended procedure. Both PID and FID instruments must be recalibrated after four hours of continuous use, as well as at the beginning of field use, since their calibration may drift with battery condition.

- i. Shake the jars or knead the bags again for thirty (30) seconds.
- j. Measure the samples' headspace concentration. If the Jar Headspace technique is used, break the foil seal through the drilled hole in the jar lid using a pencil or nail. Insert the instrument's probe about 1/2" into the jar. If the poly bag probe, and gather the bag around its neck to seal as well as possible. Record the highest reading that remains steady for 1-2 seconds (i.e., that is not due to instrument needle inertia). Repeat this step until all jars have been measured.

NOTE: Both PID and FID instruments withdraw a headspace sample from the jar. In the Jar Headspace technique, air replaces this sample, diluting the headspace as it is being measured. In the Poly Bag technique, the bag quickly collapses as its headspace is used by the instrument. In either case it is important to obtain an instrument reading as soon as possible after the seal is broken-preferably within ten (10) seconds. Once a jar or bag has been used, it may not be used again, even if sufficient time is allowed to re-establish headspace equilibrium.

- k. Repeat all steps at each other location of interest at the site. Finally, repeat all steps for the "field blank" obtained from the uncontaminated location.
- l. Average the three readings obtained from each soil sample within each 2'x2' area. If necessary, apply the instrument's relative response factor to this average to obtain the samples' benzene equivalent. Report all averages, including that of the blank, as "ppm benzene". Blank results shall not be used to adjust the readings obtained on other samples.

APPENDIX R

LIST OF NATIONAL STANDARDS AND CODES CITED

1. American National Standards Institute (ANSI), 1430 Broadway, N.Y. 10018
 - a. Chemical Plant and Petroleum Refinery Piping, ANSI/ASME B31.1, 1984.
2. American Petroleum Institute (API), 1220 L Street, Northwest, Washington, D.C. 20005.
 - a. Welded Steel Tanks for Oil Storage, API Standard 650, 7th Edition.
 - b. Recommended Practice for Abandonment or Removal of Used Underground Service Station Tanks, API Publication 1604, 2nd Edition, 1987;
 - c. Installation of Underground Petroleum Storage Systems, API Publication 1615, 4th Edition, 1987;
 - d. Recommended Practice of Bulk Liquid Stock Control at Retail Outlets, API Publication 1621.
 - e. Recommended Practice for Interior Lining of Existing Steel Underground Storage Tanks, API Publication 1631, 2nd Edition, 1987;
 - f. Recommended Practice 1110, Pressure Testing of Liquid Petroleum Pipelines.
3. Association for Composite Tanks, 108N. State Street, Suite 720, Chicago, Illinois, 60602.
 - a. Specifications for Fabrication of FRP Clad Underground Storage Tanks, Standard ACT-100.
4. National Association of Corrosion Engineers, P.O. Box 218340, Houston, Texas 77218.
 - a. Recommended Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems, NACE RP-01-69, 1983 Revision.
 - b. Recommended Practice, Control of External Corrosion of Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems, NACE Standard RP-02-85, 1985 Edition.

5. National Fire Protection Association (NFPA), Batterymarch Park, Quincy, Massachusetts 02269.
 - a. Flammable and Combustible Liquids Code, NFPA 30-1987.
 - b. Automotive and Marine Service Station Code, NFPA 30A-1987.
 - c. Installation of Oil Burning Equipment, NFPA 31, 1987.
6. Petroleum Equipment Institute (PEI), P. O. Box 2380, Tulsa, Oklahoma 74101.
 - a. Recommended Practices for Installation of Underground Liquid Storage Systems, PEI Publication RP 100-90.
7. Steel Tank Institute (STI), 728 Anthony Trail, Northbrook, Illinois 60062.
 - a. Specification for STI-P3R System of External Corrosion Protection of Underground Steel Storage Tanks, R892-89.
 - b. Composite Tank Standard, F894-89 (same as Association for Composite Tanks Standard 100).
8. Underwriters Laboratories Inc. (UL), 333 North Pfingsten Road, Northbrook, Illinois 60062.
 - a. Steel Underground Tanks for Flammable and Combustible Liquids UL Standard 58, 1986.
 - b. US Listed Non-Metal Pipe, UL Subject 971.
 - c. Glass-Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, UL Standard 1316, 1983.
 - d. Corrosion Protection Systems for Underground Storage Tanks, UL Standard 1746.
 - e. Pipe Connectors for Flammable and Combustible Liquids and LP-Gas, UL Standard 567, 1984, Revised Sept. 1985.
9. Underwriters Laboratories of Canada, General Offices and Testing Station, 7 Crouse Road, Scarborough, Ontario M1R 3A9.
 - a. Standard for Steel Underground Tanks for Flammable and Combustible Liquids, UL CAN 4-S603-M85.

- b. Glass Fiber Reinforced Plastic Pipe and Fittings for Flammable Liquids, UL CAN Guide ULC-107.
- c. Flexible Underground Hose Connectors, ULS Standard CAN 4-S633-M84.

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